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BJC/PORTS-158/R1

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Corrective Action Plan In Response to Volume 2 Independent Investigation

of the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio

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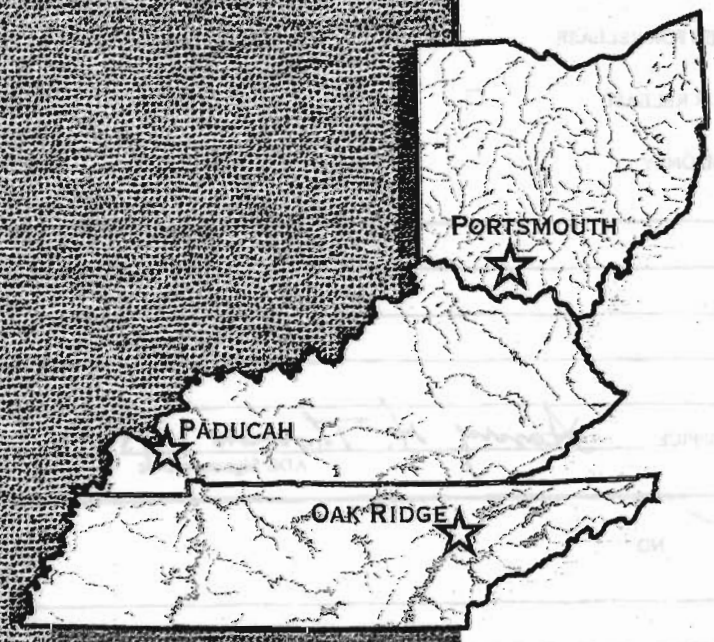

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BECHTEL JACOBS COMPANY LLC
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

This document has received appropriate reviews for release to the public.

Corrective Action Plan
In Response to
Volume 2 Independent Investigation
of the
Portsmouth Gaseous Diffusion Plant

Date Issued – August 2000

Prepared by

BECHTEL JACOBS COMPANY LLC
P.O. Box 900, Piketon, Ohio 45661
under contract DE-AC05-98OR22700

Prepared for the
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BECHTEL JACOBS COMPANY LLC
managing the
Environmental Management Activities at the
East Tennessee Technology Park
Oak Ridge Y-12 Plant Oak Ridge National Laboratory
Paducah Gaseous Diffusion Plant Portsmouth Gaseous Diffusion Plant
under contract DE-AC05-98OR22700
for the
U.S. Department of Energy

PREFACE

The ETTP Document Management Center (DMC) originally issued this document as a controlled document. Revision 1 of this document is now controlled by the PORTS DMC.

Bechtel Jacobs Company LLC prepared this document (BJC/PORTS-158/R1) in collaboration with the U.S. Department of Energy, Oak Ridge Operations Office.

CONTENTS

ACRONYMS

ALARA	as low as reasonably achievable
BCP	Baseline Change Proposal
BJC	Bechtel Jacobs Company LLC
CATS	Corrective Action Tracking System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COR	Contracting Officers Representative
D&D	decontamination and decommissioning
DAC	Derived Air Concentration
DMC	Document Management Center
DMSAs	DOE Material Storage Areas
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
EM	Environmental Management
EMP	Environmental Monitoring Plan
ES&H	Environment, Safety, and Health
FY	fiscal year
I/CATS	Issues/Corrective Action Tracking System
IDP	Individual Development Plan
IGWMP	Integrated Groundwater Monitoring Plan
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JHA	Job Hazard Analysis
LCB	Life-Cycle Baseline
LLW	low-level waste
M&I	Management and Integration
MSDS	Material Safety Data Sheets
NAVLAP	National Voluntary Laboratory Accreditation Program
NE	Nuclear Energy
NESHAP	National Emission Standards for Hazardous Air Pollutants
OEPA	Ohio Environmental Protection Agency
OR	Oak Ridge
ORO	Oak Ridge Operations
OSHA	Occupational Safety and Health Administration
P/QA	Performance/Quality Assurance
PGDP	Paducah Gaseous Diffusion Plant
PHP	Project Health Physicist
PORTS	Portsmouth Gaseous Diffusion Plant
RADCON	radiation control
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RFI	remedial feasibility investigation
RODs	record of decisions
RWP	radiation work permit
SA	Safety Advocate
SAB	safety authorization basis
SAR	Safety Analysis Report
SEC	Safety & Ecology Corporation
SOMC	Southern Ohio Medical Center

STR	Subcontract Technical Representative
SWMU	Solid Waste Management Units
TLD	Thermoluminescent Dosimeter
TSCA	Toxic Substance Control Act
TSR	technical safety requirement
USEC	U.S. Enrichment Corporation
USQ	Unreviewed Safety Question
WASTREN	WASTREN, Inc.
WSS	Work Smart Standards

EXECUTIVE SUMMARY

This Corrective Action Plan has been prepared at the request of the U.S. Department of Energy (DOE) Manager of Oak Ridge Operations (ORO). The DOE-ORO Environmental Management (EM) Program and Bechtel Jacobs Company LLC (BJC) have prepared a comprehensive Corrective Action Plan to address issues identified in a report by the DOE Office of Oversight in the Office of Environment, Safety, and Health (ES&H). That report, titled *Independent Investigation of the Portsmouth Gaseous Diffusion Plant*, (referred to hereafter as the *DOE Office of Oversight Report*) was released on May 25, 2000. It identified 17 issues pertaining to ES&H activities that are the responsibility of DOE-ORO and its current Management and Integration (M&I) contractor, BJC. BJC formally assumed M&I responsibilities under contract to DOE-ORO at the Portsmouth Gaseous Diffusion Plant (PORTS) on April 1, 1998. U.S. Enrichment Corporation (USEC) continues to operate PORTS under a lease agreement with DOE.

BACKGROUND

In January 2000, the Secretary of Energy initiated an independent investigation at PORTS in response to ES&H allegations and concerns raised at the Paducah Gaseous Diffusion Plant (PGDP). The independent investigation was conducted to (1) determine whether historical ES&H activities and controls associated with uranium enrichment and supporting activities were in accordance with the knowledge, standards, and local requirements applicable at the time; (2) identify any additional ES&H concerns that had not been documented; and (3) determine whether current work practices for DOE-controlled areas of the site adequately protect workers, the public, and the environment.

From January through March 2000, a DOE Office of Oversight investigation team mobilized to PORTS to complete a number of tasks including: interviews of personnel; observation of work activities; walkdown of facilities, work areas, and the site grounds; sampling and analysis of groundwater, surface water, sediment, and soil; performance of radiological surveys; and document reviews.

The *DOE Office of Oversight Report* concluded,"current operations do not present an immediate risk to workers or the public." However, the report noted a number of weaknesses which are summarized under 17 significant issues to be formally tracked in accordance with the DOE plan developed in response to Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 98-1 and DOE Order 414.1A.

COMPENSATORY MEASURES INITIATED OR COMPLETED

During the course of the DOE Office of Oversight investigation, DOE-ORO and BJC initiated more than 33 near-term and long-term compensatory actions based on the *DOE Office of Oversight Report* investigation team's preliminary observations and on the preliminary draft *DOE Office of Oversight Report* issued to the DOE Portsmouth Site Office at the end of March. These initial actions were summarized in a document, issued by DOE and BJC on May 16, 2000. The major actions completed or initiated by BJC were:

- Radiological verification sampling of environmental media was conducted to access areas where radiological releases may have been suspected but have not been identified and to confirm the extent of previous detections. The results of this sampling will also be used to baseline the radiological analytes for future soil, sediment, and groundwater samples.
- A technical evaluation has been completed, a contract is in place, and plans have been made to install three monitoring wells south of the barrier wall located at the southern site boundary to more effectively demonstrate that the barrier wall is containing contaminants onsite.

- A portion of the legacy low-level waste (LLW) and scrap/surplus material has been inventoried and consolidated. As part of this effort, four DOE Material Storage Areas (DMSAs) have been closed and the areas returned to USEC.
- The routine Radiological Survey Plan and Program (RRSP) was increased in scope to include air sampling in cylinder lots and contaminated metal scrap yards.
- The Routine Radiological Survey Plan and Program have also been updated to include ambient air monitoring, the de-leasing of the systems from USEC has been initiated, upgrades to the system have been initiated, and a sampling program developed.
- Specific radionuclide activities that are related to the Derived Concentration Guidelines detailed in DOE Orders have been developed for comparison to analytical results from the environmental monitoring program that will be the basis for further investigation or corrective actions. Descriptions of these levels will also be included in the revised version of the Environmental Monitoring Plan (EMP).
- WASTREN, Inc. (WASTREN) is conducting a review of all work package documentation to enhance the packages. Performance/Quality Assurance (P/QA) personnel are now routinely assessing work control activities.
- WASTREN has initiated a comprehensive process to control the issuance, dissemination, and maintenance of procedural documents. They have identified and scheduled approximately 50 external procedures for evaluation. Approximately 175 have been completed, and 50 more are currently in progress.
- Company-wide procedure PQ-A-1510 Revision 2, *Readiness Reviews*, was revised to specifically address these issues, identifying the Integrated Safety Management System (ISMS) 7 Guiding Principles as Minimum Core Requirements. This procedure was issued on April 25, 2000, with an effective date of June 30, 2000.
- Revised the procedure to require review and approval by Project Health Physicist (PHP), and hired two Radiological Engineers to interface with projects, Safety & Ecology Corporation (SEC) Radiological Control Technicians (RCTs), and initiate the Radiation Work Permits (RWPs).
- Procedures for the calibration and operation of air sampling equipment and sample analysis have been approved and fully implemented as part of the Air Monitoring Program.
- Chemical inventories are being received monthly from all applicable subcontractors. During May 2000, a BJC assessment of the worker training and Material Safety Data Sheets (MSDS) books was performed on all applicable subcontractors.
- All Job Hazard Analysis (JHAs) have been reviewed by WASTREN safety and health personnel and certain work activities (i.e., air handler maintenance) have been walked down by both safety and craft personnel. Personal air sampling is currently being conducted on individual work tasks.
- Access to the BJC computerized MSDS system has been given to Southern Ohio Medical Center (SOMC). The SOMC medical provider contract is being changed to include the medical requirements for federal employees.
- Company-wide procedure PQ-A-1450, *Subcontractor Oversight*, was specifically developed to address these issues, and provide for effective oversight of subcontractor work in compliance with subcontract requirements. This procedure was issued on March 30, 2000, with an effective date of June 30, 2000.

These initial actions are incorporated into this Corrective Action Plan.

CORRECTIVE ACTION PLAN APPROACH

The *DOE Office of Oversight Report* identified 17 significant issues that were manifested by various concerns, weaknesses, minor deficiencies, and observations. The *DOE Office of Oversight Report* indicates that although the 17 issues will be formally tracked, follow-up evaluations will consider all weaknesses and deficiencies noted. BJC is responsible for 16 of these issues. DOE-ORO is responsible for the remaining issue. This Corrective Action Plan was prepared as a single, unified document that addresses all 17 significant issues assigned to DOE-ORO and BJC.

Considering the range of findings noted by the *DOE Office of Oversight Report* under each of the 17 issues, DOE-ORO and BJC combined the individual concerns, weaknesses, minor deficiencies, and observations into common "Areas of Concern." That is, several findings that were symptomatic of a mutual weakness and could be addressed by the same corrective action were combined to facilitate implementation, as well as subsequent tracking, closure, and verification. Through this process, DOE-ORO and BJC identified 49 Areas of Concern for which corrective actions were developed. A number of Areas of Concern have several sub-actions.

To demonstrate that the corrective actions for the Areas of Concern fully encompass the individual findings itemized in the *DOE Office of Oversight Report*, a crosswalk was prepared to correlate the Areas of Concern and their respective corrective actions to the individual findings.

ROOT CAUSE ANALYSIS

DOE-ORO, DOE-HQ, and BJC performed an analysis to ensure that the proposed corrective actions address the root causes of the 17 identified issues. Both Kepner Trego and TapRoot methods were used in this evaluation. In addition, corresponding ISMS core functions and guiding principles were cross-referenced. Utilizing the major conclusions of the *DOE Office of Oversight Report* and the outcome of the Kepner-Trego and TapRoot Analysis as points of departure, a senior management team performed a final root cause determination utilizing the Delphi method.

The result of the analysis is consistent with the overall conclusions of the *DOE Office of Oversight Report* and demonstrates the need for DOE-ORO and BJC to focus increased management attention, discipline, and rigor on implementation of procedures in the field, additional training, and on surveillance and oversight of subcontractor activities.

ACTIONS TO PREVENT RECURRENCE

Based on the conclusions of the *DOE Office of Oversight Report* and on the DOE-ORO/BJC root cause analysis, it is clear that improved management attention and focus are required to correct and prevent recurrence of the issues identified by the *DOE Office of Oversight Report* investigation team. In particular, the *DOE Office of Oversight Report* investigation team expressed concern that increased reliance on subcontractors, as required by the BJC M&I contract, heightens the need for oversight and surveillance.

DOE-ORO and BJC agree that improvements in management attention and focus are required, as highlighted by the *DOE Office of Oversight Report* investigation team, both to implement the corrective actions we have identified and to prevent their recurrence. Accordingly, DOE-ORO and BJC will complete several management actions that, we believe, will augment our current efforts in Integrated Safety Management (ISM) implementation. In addition, DOE-ORO will perform a follow-up ISM Phase II verification at PORTS.

To increase the formality and rigor of our current oversight process, BJC has developed and is in the process of implementing a company-wide procedure PQ-A-1450, *Subcontractor Oversight*. The procedure addresses four critical areas of oversight:

- Reiterate the requirement for review of subcontractor ES&H plans and procedures by the Subcontract Technical Representative (STR), the Safety Advocate (SA), and the project ES&H subject matter experts prior to the start of work
- Establish a process to define the frequency and scope of surveillance and oversight of subcontractor activities, tailored to the risk of the activity
- Require verification that subcontractors are performing their own self-assessments
- Identify a process to provide timely feedback to the subcontractors

In order to foster increased management attention on procedure implementation and conduct of operations for both self-performed and subcontracted work; the BJC Self-Assessment Program will be modified to require a management assessment that focuses solely on procedure implementation in the field. To verify that the management assessments are being performed, the BJC Manager of P/QA will perform semi-annual independent assessments that provide independent field verification.

The BJC M&I contract dictates that we "flow down" DOE requirements and ISM to our subcontractors, including provisions for them to be responsible for complying with those requirements, including self-assessment and oversight. Collectively, the increased responsibility of subcontractors for performing their own oversight, the implementation of ISM, and oversight of subcontractors by BJC provides equivalent oversight when compared to a self-performance management approach.

DOE-ORO and DOE-PORTS Site Office are increasing the frequency, scope, and rigor of their oversight of BJC M&I activities. In addition, the DOE-HQ EM and NE Programs will participate in planned project reviews.

CORRECTIVE ACTION PLAN IMPLEMENTATION

Concurrent with review and approval of this Corrective Action Plan DOE-ORO and BJC will initiate the corrective actions, including completion of the initial actions already in progress. For those corrective actions, which cannot be completed within the existing BJC fiscal year (FY) baseline, baseline change proposals (BCPs) will be submitted to DOE-ORO for consideration and approval. Responsibility for overall plan implementation is assigned to the DOE-ORO Contracting Officer's Representative (COR) and BJC Deputy General Manager, Operations. The responsibility for status tracking and independent verification of BJC issue closure is assigned to the BJC P/QA organization. Upon completion of a corrective action, independent verification of closure will occur. The Phase I/II *verification report* will be entered into the evidence file and DOE will be notified in writing that BJC considers the corrective action closed and is ready for DOE validation.

CORRECTIVE ACTIONS

BJC formulated 116 corrective actions to address the 17 BJC issues identified in the *DOE Office of Oversight Report*. Major corrective actions included in this plan are:

- Improvements to the rigor and discipline for BJC oversight of subcontractors and self-assessment
- Clarifications and updates to BJC procedures and plans governing ES&H activities
- Upgrades to radiological worker training modules and performance of additional awareness sessions
- Collection, compilation, and communication of supplemental radiological data for work areas
- Clarification of roles and responsibilities for environmental data interpretation and integration
- Preparation and submittal to DOE of supplemental technical basis documentation to support radiological protection, and dose calculations

STATUS REPORTING

For each corrective action, separate sheets have been prepared with the information relevant to plan implementation, closure, and status tracking. The corrective action sheets contain the information and data that will be loaded into both the DOE Corrective Action Tracking System (CATS) and the BJC Issues/Corrective Action Tracking System (I/CATS). The data and information included in this plan are consistent with the "U.S. Department of Energy Plan to Address and Resolve Safety Issues Identified by Internal Independent Oversight," March 10, 1999. DOE-ORO and BJC will provide monthly status reports of progress in implementing the plan to DOE-HQ.

1.0 INTRODUCTION

This Corrective Action Plan has been prepared at the request of the DOE Manager of ORO. The DOE-ORO EM Program and BJC have prepared a comprehensive Corrective Action Plan to address issues identified in a report by the DOE Office of Oversight in the Office of ES&H. That report, titled *Independent Investigation of the Portsmouth Gaseous Diffusion Plant*, (referred to hereafter as the *DOE Office of Oversight Report*) was released on May 25, 2000. It identified 17 issues in Table 1, pertaining to ES&H activities that are the responsibility of DOE-ORO and its current M&I contractor, BJC. BJC formally assumed M&I responsibilities under contract to DOE-ORO at the PORTS on April 1, 1998. USEC continues to operate PORTS under a lease agreement with DOE.

DOE and BJC operations at PORTS include: site remediation pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA); treatment, storage, and disposal of legacy waste remaining from past operations and newly generated waste; uranium hexafluoride cylinder storage; landlord infrastructure; polychlorinated biphenyl collection, treatment, cleanup; and facility decontamination and decommissioning (D&D). USEC is the current operator of PORTS and leases the enrichment process facilities from the DOE.

1.1. BACKGROUND

In January 2000, the Secretary of Energy initiated an independent investigation at PORTS in response to ES&H allegations and concerns raised at the PGDP. The independent investigation was conducted to (1) determine whether historical ES&H activities and controls associated with uranium enrichment and supporting activities were in accordance with the knowledge, standards, and local requirements applicable at the time; (2) identify any additional ES&H concerns that had not been documented; and (3) determine whether current work practices for DOE-controlled areas of the site adequately protect workers, the public, and the environment.

From January through March 2000, a *DOE Office of Oversight Report* investigation team mobilized to the PORTS to complete a number of tasks including: interviews of personnel; observation of work activities; walkdown of facilities, work areas, and the site grounds; sampling and analysis of groundwater, surface water, sediment, and soil; performance of radiological surveys; and document reviews.

The *DOE Office of Oversight Report* concluded, "current operations do not present an immediate risk to workers or the public." However, the *DOE Office of Oversight Report* noted a number of weaknesses which are summarized under 17 significant issues to be formally tracked in accordance with the DOE plan developed in response to DNFSB Recommendation 98-1 and DOE Order 414.1A.

1.2. COMPENSATORY ACTIONS ALREADY UNDERWAY OR COMPLETED

During the course of the DOE Office of Oversight investigation, DOE-ORO and BJC initiated more than 33 near-term and long-term compensatory actions based on the *DOE Office of Oversight Report* investigation team's preliminary observations and on the preliminary draft *DOE Office of Oversight Report* issued to the DOE Portsmouth Site Office at the end of March. These initial actions were summarized in a document, issued by DOE and BJC on May 16, 2000.

The major actions completed or initiated by DOE and BJC are summarized in Table 2.

1.3. CORRECTIVE ACTION FUNDING

While some of the corrective actions responding to issues identified by the *DOE Office of Oversight Report* team can be addressed within FY 2000 Nuclear Energy (NE) or Environmental Management (EM) funding, completion of others will require reallocation of resources or additional funding. For example, current ORO funding for NE or EM projects could be reprioritized to address high profile issues. This reprioritization would require deletion of the scope of lower priority projects now in the FY 2000 baselines or would require provision of additional funding. Funding for completion of actions that extend beyond FY 2000 will need to be planned in the FY 2001 baseline.

BJC will submit to DOE-ORO for review and approval cost and schedule estimates for those corrective actions beyond the scope of the current baselines and plans. For those corrective actions which are currently expected to require funding beyond what is currently planned, the description of the corrective action in Section 3.0 specifically indicates that BJC will prepare and submit a cost estimate to implement the action. All other corrective actions are currently contemplated to be addressed within current funding, although unanticipated requirements or circumstances (e.g., need for enhanced safety measures) associated with corrective action implementation could necessitate additional funding.

1.4. CORRECTIVE ACTION PLAN OVERVIEW

The remainder of this plan includes the following sections:

- **Section 2.0: Corrective Action Plan Approach** – This section describes the approach used by DOE-ORO and BJC to develop specific corrective actions in response to the *DOE Office of Oversight Report* investigation team findings, observations, and weaknesses identified under each major issue. It describes the analysis utilized to identify root causes for the issues. This section presents actions that will be taken to preclude recurrence of the issues. It also discusses how DOE-ORO and BJC will implement corrective actions.
- **Section 3.0: Corrective Actions** – This section presents the detailed corrective actions, including action descriptions; DOE-ORO or BJC responsible person; initiation date; expected completion date; the documentation required to close the action; DOE support action required; and link to other corrective actions. Several crosswalk tables are also provided.

  These include a crosswalk of this plan to in-progress Corrective Action Plans (Paducah, ISMS Phase I/II Verification), a linkage of PORTS management oversight concerns to the other issues, and a crosswalk of areas of concern to the observations and findings cited in the *DOE Office of Oversight Report*.
- **Section 4.0: Status Reporting** – This section describes how BJC will track and report the status of corrective action implementation and closure, including interface with the DOE CATS.

2.0 CORRECTIVE ACTION PLAN APPROACH

This section describes the approach used by DOE-ORO and BJC to develop specific corrective actions in response to the *DOE Office of Oversight Report* investigation team findings, observations, and weaknesses identified under each major issue. This Corrective Action Plan was developed in accordance with the safety issue corrective action process described in Attachment 2 to DOE Order 414.1A, *Quality Assurance*.

2.1 IDENTIFICATION OF AREAS OF CONCERN

The *DOE Office of Oversight Report* identified 17 significant issues that were manifested by various concerns, weaknesses, minor deficiencies, and observations. The *DOE Office of Oversight Report* indicates that although the 17 issues will be formally tracked, follow-up evaluations will consider all weaknesses and deficiencies noted. BJC has responsibility for 16 issues, DOE-ORO is responsible for the remaining one. This Corrective Action Plan was prepared as a single, unified document that addresses all 17 significant issues assigned to DOE-ORO and BJC.

Considering the range of findings noted by the report under each of the 17 issues, DOE-ORO and BJC combined the individual concerns, weaknesses, minor deficiencies, and observations into common "Areas of Concern." That is, several findings symptomatic of a mutual weakness that could be addressed by the same corrective action were combined to facilitate implementation, as well as subsequent tracking, closure, and verification. Corrective actions were then developed for each Area of Concern, considering the results of the causal analysis process outlined in Section 2.2. Table 3 presents a summary of the Areas of Concern for the 17 BJC issues identified in the *DOE Office of Oversight Report*.

To ensure the Areas of Concern fully encompass the individual findings, a crosswalk was prepared to correlate the Areas of Concern and their respective corrective actions to the individual findings, referencing the page number of the Volume 2 Report. The crosswalk is provided in Table 4. In addition, portions of this crosswalk are presented with the corrective actions in Section 3.0.

2.2 ROOT CAUSE ANALYSIS

The root cause analysis of the significant issues was initiated by first identifying the areas of concern cited as elements to be addressed in the causal analysis. From the 17 significant issues cited in the *DOE Office of Oversight Report*, the senior management team identified 49 areas of concern to be addressed by a causal analysis. The BJC P/QA organization assigned conducted an internal causal analysis that included application of the Kepner Trego, TapRoot, and ISMS processes. The causal analysis was conducted consistent with BJC procedure PQ-A-1230, *Root Cause Analysis*, a copy of which is provided in Appendix B. The following is a detail of the approach taken in conducting the internal causal analysis.

The Kepner Trego process evaluated each of the 49 areas of concern by the Problem Analysis Method that consists of Describe Problem, Identify Possible Causes, Evaluate Possible Causes, and Confirm True Cause. In Describe Problem, a statement of the problem including specifying what, where, when, and extent of the problem was developed. The characteristics of each problem were evaluated for the Is (true) and Is Not (not applicable) conditions that were involved in identifying Possible Causes, knowledge and experience were used to identify Distinctions and Changes, which were characteristic of the problem that lead to the development of Possible Causes. In Evaluate Possible Causes, *DOE Office of Oversight Report* investigation team tested the possible causes against the Is and Is Not to determine the most probable cause, while identifying any assumptions made to explain the specified problem. In Confirm True Cause, verifications were made of assumptions, an independent observer observed each problem, and possible fixes were given consideration.

In addition to the Kepner Trego process, an abbreviated TapRoot analysis was also conducted. Since the significant issues were stated in a broad content, the issues were evaluated as principally Human Performance Difficulty. While utilizing the Human Performance Troubleshooting Guide, analysis questions were answered concerning Individual Performance, Team Performance, and Management System. Procedures, Training, Quality Control, Communications, Management Systems, Human Engineering, and Immediate Supervision basic cause categories were evaluated, as applicable. The [redacted] provide either support for the determined root cause or an indication that the root cause should be further examined.

In utilizing the ISM process in the causal analysis process, the senior management team's approach applied knowledge and experience in categorizing each area of concern by the most applicable core function and/or guiding principles of the ISM process.

The results of the causal analysis process identified the most probable cause by the Kepner Trego, abbreviated TapRoot and ISM core function categorization processes. Subsequently, a senior management team comprised of DOE-HQ, DOE-ORO, DOE-PORTS Site Office, and BJC personnel utilized the foregoing analysis as points of departure for assigning final root causes utilizing the Delphi method.

2.3 ACTIONS TO PREVENT RECURRENCE

Based on the conclusion of the DOE Oversight Volume 2 Report and on the DOE-ORO and BJC root cause analysis, it is clear that improved management attention and focus are required both to correct and prevent recurrence of the issues identified by the investigation team. In particular, the investigation team expressed concern that increased reliance on subcontractors, as required by the BJC M&I contract, heightens the need for oversight and surveillance. While BJC agrees that oversight and surveillance play an important part in ensuring safe and compliant practices in the field, we believe that it is at least equally important to invest resources in planning the work properly in the first place. That is why we will continue to focus heavily on implementation of our ISM program at the activity level, for our self-performed work and for our subcontractors.

However, DOE-ORO and BJC recognize that increased management attention and focus are required, as well as a more disciplined and rigorous approach to procedure implementation and oversight. Accordingly, DOE-ORO and BJC will implement several management actions to prevent recurrence of issues and will augment our current efforts in ISM implementation.

2.3.1 Enhanced DOE Oversight of M&I Work

DOE-ORO and the DOE-PORTS Site Office will implement increased frequency and rigor of oversight for the BJC M&I contract. These improvements will be implemented through the addition of professional staff at the DOE-PORTS Site Office, increased frequency and documentation of facility walkthroughs by DOE staff and routine assessments by DOE-ORO line management. DOE-HQ will participate periodically in project reviews facility walkdowns and will be on distribution for key documents.

2.3.2 Follow-up DOE-ORO ISMS Phase II Verification

A team of DOE-ORO subject matter experts will perform a follow-up Phase II verification at PORTS in response to concerns expressed by the investigation team. The follow-up verification will re-assess areas of ISMS Phase II implementation to supplement the Phase I/II verification performed in February 2000 by DOE-ORO. In addition, DOE-ORO is in the process of validating the completion of corrective actions implemented by BJC to address opportunities for improvement noted in the Phase I/II verification report.

2.3.3 BJC Subcontractor Oversight – Company-Wide Procedure (Level A)

BJC has developed and is in the process implementing a company-wide (Level A) procedure PQ-A-1450, Subcontractor Oversight (see also Corrective Action 8A in Section 3.0 of this plan). BJC has the infrastructure and processes in place to effectively specify the requirements for and monitor the performance of subcontractors. This procedure clearly establishes the roles, responsibilities, and requirements that will enhance the rigor and discipline of our approach to subcontractor oversight, eliminating subjective interpretation by the individual project organizations. The procedure also specifically defines the roles and responsibilities of the project personnel who are primarily involved, day-to-day, in providing feedback and direction to subcontractors. These include the STR, the SA, and the project ES&H subject matter experts.

The STR provides daily direction to subcontractors and ensures that they comply with all of the terms and conditions of their subcontract, including requirements for ES&H performance. The SA role was specifically created by BJC in recognition of the need to assist subcontractors in understanding and implementing DOE ES&H requirements. The SA provides an additional "set of eyes" on subcontractor safety performance. Each BJC project is also staffed with a core group of ES&H subject matter experts who are responsible for defining the ES&H requirements that are specified in subcontracts and ensuring that these are implemented in the field.

The procedure addresses four critical areas of oversight. First, it specifies that the STR, SA, and ES&H subject matter experts will review, prior to mobilization, the ES&H plans and procedures submitted by the subcontractors to determine that they reflect all requirements. Second, it establishes a process by which the projects define the frequency and scope of surveillance and oversight activities by the STR, SA, and ES&H subject matter experts. This process considers a graded approach based on the relative risk of the subcontract tasks. High-risk activities, e.g. work in DMSAs, work in highly contaminated areas, will require frequent oversight; and lower risk activities, e.g. record management, will require less frequent oversight. Third, it establishes the requirement to verify that the subcontractors are performing their own self-assessment activities, as specified in BJC subcontracts. Finally, it specifies the process of providing feedback to the subcontractors as surveillance and oversight activities occur. The P/QA organization will provide the compilation and communication of lessons learned.

Each BJC project and functional organization having cognizance over subcontractors is implementing the requirements of this procedure. The BJC P/QA organization will perform independent assessments to verify continuing compliance with the procedure.

2.3.4 BJC Management Assessments for Procedure Implementation in the Field

BJC has established and implemented a Self-Assessment Program that includes various elements of management and independent assessments. In order to foster increased management attention on procedure implementation and conduct of operations for both self-performed and subcontracted work, the program will be modified. The modification will include the requirement that, at least monthly, management assessments will focus primarily on procedure implementation in the field (see also Corrective Action 7B in Section 3.0 of this plan). This requirement will apply to all project organizations and those functional organizations having cognizance over subcontracted activity. The results of the management assessments will be reported both to the General Manager of BJC and the Manager of P/QA. Corrective actions will be implemented as appropriate.

Line managers will be held accountable for performing the assessments and ensuring that procedures are consistently followed. Progressive disciplinary actions will be taken as appropriate if independent assessments reveal a lack of implementation. The Manager of P/QA will track and trend the results of the management assessments in order to identify any systemic issues.

2.3.5 BJC Independent Assessments for Procedure Implementation in the Field

To verify that the management assessments specified above are being implemented, the BJC Manager of P/QA will revise the Independent Assessment plan and schedule to include a semi-annual independent assessment that focuses on procedure implementation (see also Corrective Action 7B-3 in Section 3.0 of this plan). This will include verification that the monthly management assessments of procedure implementation are being performed and an independent field verification of procedure implementation. The assessments will be documented, tracked, and trended, with corrective actions verified as necessary.

2.3.6 BJC Continued Focus on ISM Implementation

The M&I contract dictates that BJC "flow down" DOE requirements and ISM to subcontractors, incorporating provisions for them to be responsible for complying with those requirements, including self-assessment and oversight. The requirement to include qualified ES&H staff as part of the subcontractor project team is specified in the BJC Exhibit G subcontract language. Subcontractors may work to their own health and safety plan or adopt the BJC program. All subcontractors work to the BJC Radiological Protection Plan. Oversight, including the use of RCTs under contract to BJC is an integral part of this program.

Accordingly, both BJC staff and subcontractor ES&H staff accomplish oversight of work practices. In addition, the ISM places more emphasis on "up front" worker involvement in planning and hazard analysis. This approach builds in safe work practices to the planning process by those performing the work and reduces the heavy reliance on "back end" oversight to ensure compliance. Collectively, the increased responsibility of subcontractors for performing their own oversight, the implementation of ISM, and oversight of subcontractors by BJC, provides equivalent oversight when compared to a self-performance management approach.

DOE has completed the combined Phase I/II verification of the BJC ISM system in February 2000. This comprehensive review of both the programmatic and field requirements to determine if the ISM is being effectively implemented resulted in a number of identified deficiencies. BJC has developed a Corrective Action Plan (BJC ISMS Verification Corrective Action Plan, June 2000), and where appropriate incorporated those corrective actions into this plan. In addition, DOE-ORO will be performing a follow-up verification as described above in Section 2.3.2.

2.4 CORRECTIVE ACTION PLAN IMPLEMENTATION

Concurrent with the final review and approval of this Corrective Action Plan DOE-ORO and BJC will initiate implementation of the corrective actions, including completion of the initial actions already in progress. Responsibility for overall plan implementation is assigned to the DOE-ORO COR and the BJC Deputy General Manager, Operations. The responsibility for status tracking and independent verification of closure of BJC issues is assigned to the BJC P/QA organization.

A kickoff meeting will be held to initiate the corrective action process. The meeting will include each member of the DOE-ORO and BJC organization that is assigned responsibility for an individual corrective action. The purpose of the meeting is to verify that each individual understands the corrective action, the schedule for completion, the mechanism for status reporting, and the documentation required for corrective action closure. Evidence files will be maintained to accumulate the specified documentation.

Upon completion of a corrective action, the responsible individual will issue a completion report that the evidence file is complete. The verification report will be entered into the evidence file and DOE will be notified in writing that BJC considers the corrective action closed and ready for DOE validation.

The process for status reporting and interface with the DOE CATS is presented in Section 4.0 of this plan.

3.0 CORRECTIVE ACTIONS

This section presents the detailed corrective actions prepared in response to the *DOE Office of Oversight Report* investigation team. As outlined in Section 2.1, Identification of Areas of Concern, the observations and findings detailed under each of the 17 issues assigned to DOE-ORO and BJC have been combined into Areas of Concern for which corrective actions have been developed. Each Area of Concern has been assigned a number to facilitate tracking and roll-up to the respective issue. For example, under Issue #1 (PORTS-INV-00-01) three Areas of Concern have been identified, with a corrective action prepared for each. In some instances, there may be sub-actions required for each corrective action and these are highlighted in the individual corrective action description and assigned a unique number.

To demonstrate that the corrective actions for the Areas of Concern fully encompass the individual findings itemized in the *DOE Office of Oversight Report* a crosswalk was prepared to correlate the Areas of Concern and their respective corrective actions to the individual findings. The crosswalk includes the beginning words of the finding or observation statement, references the page number of the *DOE Office of Oversight Report*, and the respective corrective action. A crosswalk is presented at the beginning of each set of corrective actions.

For each corrective action, separate sheets have been prepared with the information relevant to plan implementation and closure. The corrective action sheets contain the information and data that will be loaded into both the DOE CATS and the BJC I/CATS. Table 5 summarizes the information and data presented on the corrective action sheets. The data and information included in this plan are consistent with the "U.S. Department of Energy Plan to Address and Resolve Safety Issues Identified by Internal Independent Oversight," March 10, 1999.

A schedule summarizing the expected completion dates of all corrective actions is provided as Figure 1.

3.1 CROSSWALK TO IN-PROGRESS CORRECTIVE ACTION PLANS

As the result of the independent investigation at the PGDP in 1999, BJC prepared and implemented a Corrective Action Plan (BJC/OR-453/R1, Issued December 1999). Several actions in this plan are designed to address issues at all BJC-managed facilities, including PORTS. Since the actions were just being initiated during the time of the *DOE Office of Oversight Report* investigation team review at PORTS, some actions were not fully completed. Accordingly, those actions already planned and in-progress that are relevant to issues identified at PORTS are referenced, where appropriate, in the corrective action descriptions, which follow.

Additionally, DOE-ORO performed Phase I/Phase II ISMS Verification of BJC practices during February 2000. In response to the *DOE Office of Oversight Report*, BJC prepared and implemented a Corrective Action Plan in response to identified weaknesses. The BJC ISMS Corrective Action Plan includes several BJC-wide actions and also several actions in response to ISMS implementation concerns noted by the *DOE Office of Oversight Report* investigation team in their *DOE Office of Oversight Report* for PORTS. As stated above, these actions are referenced where appropriate.

For convenience, Table 6 summarizes the PGDP and ISMS verification corrective actions and indicates which PORTS actions are relevant.

3.2 LINKAGE BETWEEN ISSUE 16 AND OTHER ISSUES

Issue 16 (PORTS-INV-00-16) is an overarching management oversight issues dealing with requirements management; operational awareness, performance monitoring and appraisal; training, qualifications and staffing; and the Integrated Safety Management System. As such, it has links with many of the issues noted in the *DOE Office of Oversight Report*. The corrective actions for many of the areas of concern associated with the other issues noted in the *DOE Office of Oversight Report* are linked to the corrective actions for issue 16 areas of concern. These linkages are documented in Table 7 - Linkage of PORTS Management Oversight Concern Issue 16 with Management Oversight Components in Issues 1 through 15 and 17.

ISSUE #1 (PORTS-INV-00-01). The PORTS environmental restoration program, since the early 1990s, has not fully characterized radiological contaminants, did not integrate DOE radiological requirements into the cleanup program, and developed risk estimates that underestimated radiological risk.

AREA OF CONCERN 1A.

The lack of rigor for sampling, analysis, and evaluation of radiological data may have led to inadequate risk assessments.

This area of concern addresses the following statements, observation, or findings in the *DOE Office of Oversight Report*:

- Collection and analysis of radiological data lacked rigor necessary to . . . Page 9

ISSUE #1 (PORTS-INV-00-01). The PORTS environmental restoration program, since the early 1990s, has not fully characterized radiological contaminants, did not integrate DOE radiological requirements into the cleanup program, and developed risk estimates that underestimated radiological risk.

AREA OF CONCERN 1A.

The lack of rigor for sampling, analysis, and evaluation of radiological data may have led to inadequate risk assessments. This area of concern relates to the adequacy of the data used to support the selection and implementation of RCRA corrective actions and the quality of documents submitted for regulatory approval. The PORTS cleanup program did not adequately define the criteria to be used for obtaining and evaluating radiological data gathered since the early 1990s or fully integrate the data into risk assessments. Risk assessments were conducted in support of cleanup program during the decision process for selecting alternative treatment strategies and technologies. The methods used to sample, analyze, and evaluate radiological data were not consistent with DOE guidance and industry standards such as the DOE Implementation Guide for Radiological Surveys, Multi-Agency Radiation Survey and Site Environmental Manual, NUREG-5849, or their predecessors. These guides define acceptable methodologies for conducting surveys, selecting appropriate number of sampling locations, data quality objectives, and analytical specifications. The State of Ohio has questioned the validity of some of PORTS risk assessment approaches, including the exclusion of certain uranium daughter products in risk calculations.

ROOT CAUSE:
The root cause is Other Management Problems (6F).
The requirements for sampling and analysis procedures and the evaluation and utilization of radiological data were not adequately stipulated or implemented.

ISMS EVALUATION:
F1 Define the Scope of Work
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 1A-1. Use the change control process of ORO Order 250, Chapter V to include where appropriate, the addition of a select number of National Standards, Regulations, and DOE Orders to the Work Smart Standards (WSS). This process is effective as evidenced by the number of revisions already made to the WSS set. To correct this issue and have enforceable requirements, the BJC contract may need to be modified. Once the appropriate additions to the WSS have been determined, to ensure that there are adequate ES&H standards in place to protect the workers, the public, and the environment; a change process to the BJC contract will be initiated.

Corrective Action 1A-2. Complete a radiological verification sampling program to obtain additional data to confirm the extent and level of radiological contamination, and isotopic distribution of Uranium and Transuranics, on plantsite.

Corrective Action 1A-3. Revise Life-Cycle Baseline (LCB) to include evaluation and preparation of a report, and further sampling.

Corrective Action 1A-4. Re-evaluate data obtained from corrective action 1A-2 and issue report on results to assess extent and type of radionuclides and modify original risk assessment calculations, as appropriate.

Corrective Action 1 A-5. Evaluate the potential impacts of actions 1A-1 through 1A-4 on the PORTS RCRA Corrective Action Process. Develop an Action Plan, if required, to address the potential impacts.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 1A-1. Danny Whitaker-Sheppard, BJC
Corrective Action 1A-2. Don Wilkes, BJC
Corrective Action 1A-3. Clint Maynard, BJC
Corrective Action 1A-4. Don Wilkes, BJC
Corrective Action 1A-5. Don Wilkes, BJC

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 1A-1. September 30, 1999
Corrective Action 1A-2. September 1, 1999
Corrective Action 1A-3. September 1, 1999
Corrective Action 1A-4. August 1, 2000
Corrective Action 1A-5. November 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 1A-1. June 2001
Corrective Action 1A-2. Complete February 18, 2000
Corrective Action 1A-3. September 30, 2000
Corrective Action 1A-4. October 31, 2000
Corrective Action 1A-5. June 1, 2001

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 1A-1. Signed contract modification
Corrective Action 1A-2. Project Environmental Management System printout on lab sample receipt
Corrective Action 1A-3. Approved BCPs
Corrective Action 1A-4. Report
Corrective Action 1A-5. Report

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 1A-3. PORTS CAP 1B-1
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #1 (PORTS-INV-00-01). The PORTS environmental restoration program, since the early 1990s, has not fully characterized radiological contaminants, did not integrate DOE radiological requirements into the cleanup program, and developed risk estimates that underestimated radiological risk.

AREA OF CONCERN 1B.

Lack of integration between RCRA Corrective Action Process and DOE's potential future free release of areas to the public.

This area of concern addresses the following statements, observations, or findings in the *DOE Office Of Oversight Report*:

- Have not integrated applicable DOE requirements for public and . . . Page 9
- The relationship between the RCRA corrective action process and . . . Page 9
- However, the lack of adherence to proper radiation protection . . . Page 9
- As a result, "No Further Action" decisions submitted, as part of the . . . Page 9
- Compliance with DOE requirements must be . . . Page 9
- Remedial feasibility investigations (RFIs) and subsequent studies did not . . . Page 9
- . . . , the RFI baseline risk assessments were found to underestimate . . . Page 10

ISSUE #1 (PORTS-INV-00-01). The PORTS environmental restoration program, since the early 1990s, has not fully characterized radiological contaminants, did not integrate DOE radiological requirements into the cleanup program, and developed risk estimates that underestimated radiological risk.

AREA OF CONCERN 1B.

Lack of integration between RCRA Corrective Action Process and DOE's potential future free release of areas to the public.

ROOT CAUSE:

The root cause is management problems (6E and 6B).

6E Policy Not Adequately Defined/6B Planning Deficiency. A policy, which required end use planning and consideration of potential future free release of areas to the public, was not in place. The EH Investigation Team reported that a clear determination was not made between the need for long-term DOE custody and the future free release of areas to the public. As a result, more stringent cleanup standards, particularly radiological cleanup standards, may have to be considered at the time of D&D if DOE intends to keep open the option of potential free release of areas to the public.

ISMS EVALUATION:

F3 Development and Implement Hazard Controls

P3 Competence Commensurate with Responsibility

DESCRIPTION OF CORRECTIVE ACTION:

The corrective actions outlined in response to Area of Concern 1A address the adequacy of previous radiological characterization of Portsmouth release sites, the potential need for additional radiological sampling, and the steps necessary to validate that the previously selected remedial alternatives were adequate based the residual radiological risks. This process could determine there is no need for additional remediation, based on risk analysis and the future land use. It could also result in a need for additional remedial actions. Thus, Corrective Action Plan steps 1A-2 through 1A-4 address those areas that have been remediated under the RCRA process.

Radiological characterization of release sites performed in the future under the RCRA process will be based on the report developed in Corrective Action Plan step 1A-4. That report will provide the guidance to ensure the proper uranium isotopic and transuranic analyses are performed and used in the risk analysis for the end state of that release site.

For facilities that must undergo disposition, that is deactivation and decommissioning, in the future, it is expected that the process will be similar to that outlined by DOE in *Facility Disposition: Principles for Accelerated Project Management, DOE/EH-413-0002, June 2000.* This document integrates aspects of life cycle asset management with CERCLA and ISM. The bulletin outlines DOE's responsibility for meeting applicable or relevant and appropriate requirements to the extent practicable, and for instituting appropriate public involvement and documentation programs for decisions made regarding decommissioning actions. The technical support bulletin requires early definition of facility end state, which is defined as agreed-upon facility condition that is to be achieved after completion of deactivation and decommissioning. The end state of some facilities may be reuse through the Southern Ohio Diversity Initiative.

The process for involving regulators and the process to be followed at Portsmouth for facility disposition has not been established. A process similar to that followed at the DOE Mound EM Project and described in *D&D Lessons Learned from the Mound Plant: The Facility 'Binning' Process, DOE/EH-4413/9907,* could prove beneficial to DOE and provide assurance that facility disposition is conducted in a manner that is protective of human health and the environment with regulator concurrence.

To meet the goal of facility disposition with regulator concurrence that DOE actions taken are protective of human health and the environment, BJC will develop a strategy for facility disposition that will include aspects of the referenced documents. The strategy document will be provided to DOE for consideration in negotiations with Ohio Environmental Protection Agency (OEPA) and U.S. Environmental Protection Agency Region V as appropriate.

Corrective Action 1B-1. Develop Portsmouth Facility Disposition Strategy based upon DOE Office of Oversight guidance documents considering the expectations of OEPA under the RCRA Corrective Actions program.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 1B-1. Jimmy Massey

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 1B-1. August 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 1B-1. November 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 1B-1. D&D long-range planning report

DOE SUPPORT ACTION REQUIRED? (specify)

Decision from DOE on plant turnover in addition to appropriate funding for D&D

LINK TO OTHER CORRECTIVE ACTION? (specify)

None

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion

ISSUE #1 (PORTS-INV-00-01). The PORTS environmental restoration program, since the early 1990s, has not fully characterized radiological contaminants, did not integrate DOE radiological requirements into the cleanup program, and developed risk estimates that underestimated radiological risk.

AREA OF CONCERN 1C.

Screening and evaluation of solid waste management units is incomplete.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- The investigation team was informed during interviews . . . Page 12
- Additional screening and evaluation of additional areas are necessary. Page 12

ISSUE #1 (PORTS-INV-00-01). The PORTS environmental restoration program, since the early 1990s, has not fully characterized radiological contaminants, did not integrate DOE radiological requirements into the cleanup program, and developed risk estimates that underestimated radiological risk.

AREA OF CONCERN 1C.

Screening and evaluation of solid waste management units is incomplete. The EH Investigation Team noted, from interviews with past plant workers, that several locations that have processed or stored hazardous materials may have been unknown to plant management.

ROOT CAUSE:

The root cause is Personnel Error (3C) Communication Problems.
The process for reviewing environmental records and interviewing former PORTS employees was ineffective in identifying all Solid Waste Management Units (SWMUs). The EH Investigation Team identified eight additional potentially- contaminated areas from interviews and historical record reviews.

ISMS EVALUATION:

F1 Define the Scope of Work
P4 Balanced Priorities

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 1C-1. Revise LCB to include scope definition and cost estimates, and evaluation of new units in accordance with existing procedures.

Corrective Action 1C-2. Identified units, including the eight potentially contaminated areas on page 11 of *DOE Office of Oversight Report*, will be evaluated to develop the basis for further action, if any.

Corrective Action 1C-3. Investigation and sampling plans will be developed, as necessary, for OEPA approval prior to the initiation of field investigations.

Corrective Action 1C-4. Corrective actions for additional work under the consent decree for OEPA will be developed, after evaluation of the potential impact on the RCRA Corrective Action Process and the Records of Decisions (RODs) for the four quadrants.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 1C-1. Clint Maynard
Corrective Action 1C-2. Don Wilkes
Corrective Action 1C-3. Don Wilkes
Corrective Action 1C-4. Don Wilkes

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 1C-1. September 1, 2000
Corrective Action 1C-2. October 1, 2000
Corrective Action 1C-3. December 1, 2000
Corrective Action 1C-4. September 1, 2001

EXPECTED COMPLETION DATE:

Corrective Action 1C-1. September 30, 2000
Corrective Action 1C-2. November 30, 2000
Corrective Action 1C-3. February 28, 2001
Corrective Action 1C-4. September 30, 2002

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 1C-1. Approved BCPs
Corrective Action 1C-2. Letter report to DOE
Corrective Action 1C-3. Issue plans to DOE
Corrective Action 1C-4. Letter report to DOE

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve the BCPs and funding

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion

ISSUE #2 (PORTS-INV-00-02). The migration of contaminants from the X-749 landfill to the south is not adequately monitored.

AREA OF CONCERN 2A.

Lack of groundwater monitoring south of the X-749 slurry wall.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report*:

- However, monitoring is not performed to determine the effectiveness . . . Page 12
- No written report on the CPT-based assessment . . . Page 12

ISSUE #2 (PORTS-INV-00-02). The migration of contaminants from the X-749 landfill to the south is not adequately monitored.

AREA OF CONCERN 2A.

Monitoring is not performed to confirm the effectiveness of the X-749 slurry wall in preventing the migration of groundwater contaminants beyond the slurry wall to the south.

ROOT CAUSE:
The root cause is a design problem.
4B Design Problem – Inadequate or defective design which excluded permanent RCRA sampling wells downgradient of the X-749 slurry wall.

Original plans and design of the slurry wall project did not include any long-term groundwater monitoring wells immediately south of the slurry wall. Although monitoring and contaminant transport modeling results imply that groundwater contamination has not migrated across the slurry wall boundary, monitoring wells will confirm the effectiveness of the slurry wall in preventing migration of contaminated groundwater.

ISMS EVALUATION:
F1 Define the Scope of Work
P4 Balanced Priorities

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 2A-1. Install the required number of monitoring wells south of the X-749 slurry wall, in accordance with the groundwater monitoring plan.

Corrective Action 2A-2. Add the newly installed monitoring wells to the routine surveillance and monitoring program, as reflected in the revised Integrated Groundwater Monitoring Plan (IGWMP).

Corrective Action 2A-3. Incorporate sampling results in Annual Groundwater Monitoring Report to DOE.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 2A-1. Don Wilkes
Corrective Action 2A-2. Don Wilkes
Corrective Action 2A-3. Don Wilkes

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 2A-1. June 1, 2000
Corrective Action 2A-2. January 1, 2001
Corrective Action 2A-3. January 1, 2002

EXPECTED COMPLETION DATE:

Corrective Action 2A-1. December 30, 2000
Corrective Action 2A-2. March 31, 2001
Corrective Action 2A-3. March 31, 2002

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 2A-1. Letter of completion and well completion logs
Corrective Action 2A-2. Revised IGWMP issued to DOE
Corrective Action 2A-3. *Annual Groundwater Monitoring Report* issued to DOE

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve the BCP and funding

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #3 (PORTS-INV-00-03). Legacy LLW and scrap/surplus material containers and storage areas are not consistently maintained, and responsibility for managing some buildings with abandoned equipment is not clear.

AREA OF CONCERN 3A.

Legacy LLW and scrap/surplus material containers are not stored and maintained in a manner consistent with best management practices, and there is no long-range plan for the disposition of scrap and D&D waste at PORTS.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report*:

- Concerns include deficiencies in maintain LLW storage . . . Page 13
- . . . and unauthorized creation of DMSAs . . . Page 13
- PORTS continues to store LLW outdoors, some in standing . . . Page 13
- Disposition plans and strategies . . . Page 13

ISSUE #3 (PORTS-INV-00-03). Legacy LLW and scrap/surplus material containers and storage areas are not consistently maintained, and responsibility for managing some buildings with abandoned equipment is not clear.

AREA OF CONCERN 3A.

Legacy LLW and scrap/surplus material containers are not stored and maintained in a manner consistent with best management practices, and there is no long-range plan for the disposition of scrap and D&D waste at PORTS.

ROOT CAUSE:
The root cause is Other Management Problem (6F).
Since LLW has no regulatory drivers, funding constraints limited final disposition of these waste streams. Because of these constraints, best management practices were not always followed in the storage of legacy LLW and scrap/surplus material at PORTS. The recently established requirements of DOE Order 435.1 should apply for long-term storage of LLW, scrap and D&D waste in the absence of a long-range plan for the disposition of scrap and D&D wastes at PORTS, providing sufficient funding is provided.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P4 Balanced Priorities

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 3A-1. Apply the DOE Order 435.1 ORO implementation plan by providing a schedule and estimate for dispositioning waste currently stored outside by disposal or moving into space vacated by dispositioning waste stored indoors.

Corrective Action 3A-2. Modify LCB and submit BCP to reflect disposition of waste.

Corrective Action 3A-3. Complete shipment of LLW stored in outside areas at X-3346.

The LLWs stored outside the X-3346 are being shipped for disposal. Two hundred twenty one boxes have been shipped as of July 6, 2000. This project is part of a FY 2000 performance-based incentive to complete shipment of 890 containers of this waste stream by September 30, 2000.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 3A-1. Don Wilkes
Corrective Action 3A-2. Clint Maynard
Corrective Action 3A-3. Don Wilkes

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 3A-1. July 10, 2000
Corrective Action 3A-2. October 1, 2000
Corrective Action 3A-3. November 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 3A-1. September 30, 2000
Corrective Action 3A-2. October 30, 2000
Corrective Action 3A-3. June 30, 2002

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 3A-1. Copy of schedule and estimate for disposition of wastes stored outdoors
Corrective Action 3A-2. Approved BCPs
Corrective Action 3A-3. Completed shipping manifests

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve the BCP and funding

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #3 (PORTS-INV-00-03). Legacy LLW and scrap/surplus material containers and storage areas are not consistently maintained, and responsibility for managing some buildings with abandoned equipment is not clear.

AREA OF CONCERN 3B.

Good characterization data for containers near X-744G does not exist and these wastes are not being managed pursuant to environmental regulations or the requirements of DOE Order 435.1.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report*:

- Good characterization data for the containers near X-744G does not . . . Page 13
- However, 51 converter shells and 298 B-25 . . . Page 13

ISSUE #3 (PORTS-INV-00-03). Legacy LLW and scrap/surplus material containers and storage areas are not consistently maintained, and responsibility for managing some buildings with abandoned equipment is not clear.

AREA OF CONCERN 3B.

Good characterization data for containers near X-744G does not exist and these wastes are not being managed pursuant to environmental regulations or the requirements of DOE Order 435.1.

ROOT CAUSE:
The root cause is Other Management Problem (6F).
Currently these wastes are being managed as LLW based on process knowledge and there is no information that any wastes fall under RCRA or Toxic Substance Control Act (TSCA) regulations. Historical documentation, including request for disposals, do not indicate any regulated wastes. Although RCRA/TSCA requirements may not apply to the storage of these wastes, they may be subject to radiological regulations and requirements for storage. This waste stream is included in the long-range plans and disposition maps for disposal of radioactive wastes stored at PORTS. Completion of the corrective actions is dependent upon approval of BCPs by DOE.

ISMS EVALUATION:
F1 Define the Scope of Work
P2 Clear Roles and Responsibilities

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 3B-1. Document process knowledge of waste in operating records to provide an auditable file on characterization of this waste stream.

Corrective Action 3B-2. Generate estimate and submit BCP to characterize for final disposal and include in LCB. Completion will be accomplished based on the LCB sequencing process and funding.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 3B-1. Don Wilkes
Corrective Action 3B-2. Clint Maynard

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 3B-1. May 8, 2000
Corrective Action 3B-2. March 31, 2000

EXPECTED COMPLETION DATE:

Corrective Action 3B-1. Complete June 19, 2000
Corrective Action 3B-2. September 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 3B-1. Note to file placed in operating record with copy to DOE
Corrective Action 3B-2. Approved BCPs

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve the BCP and funding

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #4 (PORTS-INV-00-04). The DOE radiological environmental surveillance program design, implementation, and reporting at PORTS do not currently meet the requirements of DOE Orders 5400.1 and 5400.5 and established industry guidance, including a technical basis that is inadequate for the current level and method of implementation.

AREA OF CONCERN 4A.

Deficiencies exist in the EMP and IGWMP for the sampling, analysis, and evaluation of radiological data.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report*:

- The justification for eliminating various environmental media from . . . Page 14
- It was also determined that neither the 1996 nor the 1999 EMP was . . . Page 14
- The current radiological environmental surveillance program at PORTS . . . Page 15
- DOE does not conduct sampling of other media, such as air, soil, . . . Page 15
- The actual sampling frequency and technical basis should be specified . . . Page 15
- there is no mechanism to ensure that USEC data collected and reviewed . . Page 15
- There is no documented justification for the lack of routine isotopic . . . Page 15
- The correlation of total uranium to isotopic uranium is not defined in . . . Page 15
- Personnel responsible for reviewing results of the sampling program . . . Page 15
- Annual site environmental reports provide data on gross alpha . . . Page 15
- There is no method for correlating or evaluating the gross alpha . . . Page 15
- The environmental surveillance program does not provide for the . . . Page 15
- The current design of the surface water sampling program does not . . . Page 16
- The outfall belongs to USEC and is not sampled by DOE despite the . . . Page 16
- Another DOE release path was found . . . Page 16

ISSUE #4 (PORTS-INV-00-04). The DOE radiological environmental surveillance program design, implementation, and reporting at PORTS do not currently meet the requirements of DOE Orders 5400.1 and 5400.5 and established industry guidance, including a technical basis that is inadequate for the current level and method of implementation.

AREA OF CONCERN 4A.

A questionable technical basis exists for the Environmental Monitoring Program (EMP) and IGWMP, which stipulate requirements for the sampling, analysis, and evaluation of radiological data. DOE Order 5400.1 establishes requirements for environmental monitoring and surveillance programs and references requirements in DOE Order 5400.5 and in Regulatory Guide DOE/EH-0173T. Several deficiencies in the radiological environmental surveillance program were noted by the EH Investigation Team: various environmental media were eliminated from the PORTS environmental sampling program; lack of routine isotopic analysis of environmental samples; lack of guidance or procedures for determining action levels for total uranium results in media sampled; incorrect use of Derived Concentration Guide (DCG) in reporting gross alpha activity, etc.

ROOT CAUSE:
The root cause is Management Problems (6E).
6E Policy Not Adequately Defined, Disseminated, or Enforced.

BJC notes that there are several unique aspects of its M&I contract with the DOE. The M&I contract does not provide that BJC comply with all DOE directives. Specific ES&H requirements are tailored for the contract scope, maintained, and flowed down to subcontractors, as applicable. These ES&H requirements are contained in specific sets of Work Smart Standards (WSS) and Standard/Requirement Identification Documents as identified in the contract Baseline List of Required Compliance Documents. A guiding principle for the WSS process is that the approved set of standards shall be accepted by all Department Elements as the basis for the performance of work and of oversight [Reference DOE M450.3-1, Section 2.c (5)].

ISMS EVALUATION:
F1 Define the Scope of Work
P5 Provide Feedback and Continuous Improvement

DESCRIPTION OF CORRECTIVE ACTION:

Upon completion of corrective action 16A-1, and if appropriate, the incorporation of DOE Order 5400.1 and 5400.5 will resolve this area of concern. However, the corrective actions below will incorporate equivalent requirements of the orders in the EMP and IGWMP.

Corrective Action 4A-1. Issue to DOE the revised Environmental Monitoring Program (EMP) documents, including the EMP and IGWMP, to include additional radionuclides, locations, media, and the rationale for selection and evaluation of data and add requirements equivalent to DOE 5400.1 and 5400.5 requirements.

Corrective Action 4A-2. A work authorization will be initiated with USEC to provide USEC environmental monitoring data to BJC for review, trending, and incorporation into the monitoring program as required.

Corrective Action 4A-3. BJC will appoint an environmental ALARA Program Manager for PORTS.

The ALARA Program Manager will have significant and relevant experience and qualifications in environmental health physics. He/she will be responsible for preparing the Portsmouth ALARA plan and coordinating the bi-monthly technical integration sessions with the appropriate managers. The ALARA Program Manager will report functionally in the BJC ES&H organization.

Corrective Action 4A-4. BJC will prepare and submit an Environmental ALARA plan for PORTS and DOE PORTS Site Office for approval incorporating requirements equivalent to DOE Order 5400.5 as a best management practice.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 4A-1. Don Wilkes
Corrective Action 4A-2. Don Wilkes
Corrective Action 4A-3. Rick Dearholt
Corrective Action 4A-4. Carl Efird

CORRECTIVE ACTION INTIATION DATE:

Corrective Action 4A-1. June 1, 2000
Corrective Action 4A-2. June 1, 2000
Corrective Action 4A-3. February 29, 2000
Corrective Action 4A-4. May 15, 2000

EXPECTED COMPLETION DATE:

Corrective Action 4A-1. September 30, 2000
Corrective Action 4A-2. July 31, 2000
Corrective Action 4A-3. September 30, 2000
Corrective Action 4A-4. July 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 4A-1. Revised IGWMP and EMP issued to DOE
Corrective Action 4A-2. Work Authorization
Corrective Action 4A-3. Organizational Announcement and copy of resume submitted to DOE
Corrective Action 4A-4. Environmental ALARA Plan issued to DOE

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve the BCP and funding for modifications to plans and implementation of additional requirements established by DOE 5400.1 and 5400.5

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 4A-3. PAD CAP 2D-1
Corrective Action 4A-4. PAD CAP 2D-2

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #5 (PORTS-INV-00-05). Radiological exposure pathways for DOE operations have not been fully assessed or documented with an adequate technical basis.

AREA OF CONCERN 5A.

Lack of fugitive emission assessment protocol that fully evaluates and documents radiological exposure pathways to ensure credibility and technical defensibility.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report*:

- The 1998 annual site environmental report cites a maximum air . . . Page 16
- While the procedures and estimates reviewed for estimating the . . . Page 16
- The magnitude of fugitive emissions at PORTS is not known, and this . . . Page 16
- Dose calculations do not include any contribution to dose from fugitive . . . Page 16
- The investigation team identified two air emission sources that BJC . . . Page 17
- No health physics surveys have been performed on the air side of the . . . Page 17

ISSUE #5 (PORTS-INV-00-05). Radiological exposure pathways for DOE operations have not been fully assessed or documented with an adequate technical basis.

AREA OF CONCERN 5A.

Lack of fugitive emission assessment protocol that fully evaluates and documents radiological exposure pathways to ensure credibility and technical defensibility. The magnitude of fugitive emissions at PORTS is not known, and this pathway has not been fully evaluated or documented as recommended by DOE Regulatory Guide DOE/EH-0173T. Fugitive emissions from several areas are possible including the hot scrap yard, ponds such as X-701B, and leaks from UF6 cylinder storage activities.

ROOT CAUSE:
The root cause is Management Problems (6B) leading to Procedure Problems (2A).
6B Work Organization/Planning Deficiency/ 2A Defective or Inadequate Procedure.

Radiological exposure pathways are being assessed at the PORTS site. The ambient air-monitoring network is being de-leased from USEC and upgraded. The pathways will be evaluated, including contributions from fugitive emissions, and the technical basis will be documented with completion of the corrective actions below.

ISMS EVALUATION:
F2 Analyze the Hazards
P3 Competence Commensurate with Responsibility

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 5A-1. Revise the EMP to ensure technical defensibility and include requirements equivalent to DOE Orders 5400.1 and 5400.5 and Regulatory Guide DOE/EH-0173T.

Corrective Action 5A-2. Samples will be collected and evaluated at the groundwater treatment facilities that have air strippers. In the event analysis indicates any exceedances are detected, immediate mitigation action will be instituted.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 5A-1. Don Wilkes
Corrective Action 5A-2. Don Wilkes

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 5A-1. June 1, 2000
Corrective Action 5A-2. June 12, 2000

EXPECTED COMPLETION DATE:

Corrective Action 5A-1. September 30, 2000
Corrective Action 5A-2. June 30, 2001

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 5A-1. EMP Issued to DOE
Corrective Action 5A-2. *Radiation National Emission Standards for Hazardous Air Pollutants (NESHAP) Annual Report* issued to DOE and an interim letter report to DOE with monitoring results immediately following sampling event

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve BCPs and funding

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 5A-1. PORTS CAP 4A-1

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #5 (PORTS-INV-00-05). Radiological exposure pathways for DOE operations have not been fully assessed or documented with an adequate technical basis.

AREA OF CONCERN 5B.

Inadequate ambient air monitoring program.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report*:

- While the use of ambient air data may be acceptable, the technical basis . . . Page 17
- In addition, several air samplers have been out of service for more than . . . Page 17
- DOE has also not routinely been requesting, receiving, or evaluating air . . . Page 17

ISSUE #5 (PORTS-INV-00-05). Radiological exposure pathways for DOE operations have not been fully assessed or documented with an adequate technical basis.

AREA OF CONCERN 5B.

Inadequate ambient air monitoring program.

ROOT CAUSE:
The root cause is Design Problem (4B) Inadequate or Defective Design leading to (2A) Defective or Inadequate Procedure.
4B Design Problem – Inadequate or Defective Design/2A Defective or Inadequate Procedure. USEC currently operates an offsite ambient air monitoring program consisting of 12 air monitoring stations along the plant perimeter and offsite. At the time of the EH Investigation Team visit to PORTS several air samplers had been out of service for more than six months, including four high-volume samplers.

Planning for the upgrade of the ambient air monitoring system is currently underway. An air pathways analysis will be conducted to determine that the sensitivity and location of the air monitoring stations are adequate. Additionally, these locations will include analysis for transuranic constituents.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P6 Hazard Control Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 5B-1. The ambient air monitoring system once de-leased from USEC by DOE will be upgraded, in accordance with the findings of Corrective Action 4A-2.

Corrective Action 5B-2. The pathways will be evaluated, including contributions from fugitive emissions, and the ambient air monitoring system will be upgraded in accordance with the findings of Corrective Action 4A-2.

Corrective Action 5B-3. Evaluate the Radiation NESHAP Compliance Plan for adequacy and revise, as necessary.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 5B-1. Don Wilkes
Corrective Action 5B-2. Don Wilkes
Corrective Action 5B-3. Don Wilkes

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 5B-1. June 12, 2000
Corrective Action 5B-2. June 26, 2000
Corrective Action 5B-3. June 26, 2000

EXPECTED COMPLETION DATE:

Corrective Action 5B-1. December 31, 2000
Corrective Action 5B-2. September 30, 2000
Corrective Action 5B-3. June 30, 2001

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 5B-1. Letter report issued to DOE
Corrective Action 5B-2. Letter report issued to DOE
Corrective Action 5B-3. Revised Radiation NESHAP Compliance Plan to DOE

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve BCPs and funding

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 5B-1; Corrective Action 4A-2
Corrective Action 5B-2; Corrective Action 4A-2

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #6 (PORTS-INV-00-06). Effective implementation of PORTS environmental programs has been limited by weaknesses in identification and communication of environmental requirements, insufficient numbers of professional environmental staff, and technical errors in analyses and reports.

AREA OF CONCERN 6A.

Deficiencies exist in the management of staffing and planning in support of program requirements.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

ISSUE #6 (PORTS-INV-00-06). Effective implementation of PORTS environmental programs has been limited by weaknesses in identification and communication of environmental requirements, insufficient numbers of professional environmental staff, and technical errors in analyses and reports.

AREA OF CONCERN 6A.

Deficiencies exist in planning, staffing, and the process of procedure development and implementation in support of environmental program requirements.

ROOT CAUSE:

The root cause is Management Problems (6B, D, and E) leading to inadequate procedures.

2A Defective or Inadequate Procedures have resulted in the application of ALARA principles (environmental and occupational radiation protection) in the absence of a formal program that delineates responsibilities and procedural requirements. Inadequate review of procedures has also been the direct cause of technical errors in analyses and reports, as the lack of appropriate environmental or health physics review and accountability for report content has affected the accuracy and validity of any decision-making resulting from these reports.

6B Work Organization/Planning Deficiency. The requirements for effective planning and implementation of a comprehensive environmental program have not been adequately stipulated or communicated to the professional environmental staff.

6D Improper Resource Allocation. Limited staff has been improperly allocated to environmental tasks for which they do not possess the necessary experience and technical expertise to ensure effective interpretation and evaluation of environmental data or programmatic requirements.

6E Policies for employees who have line management oversight responsibility for specific contract requirements for public and environmental protection have not be adequately defined, disseminated, enforced, or implemented.

During the original staff planning process, the complexity of the program requirements was underestimated. The corrective actions below will address this issue.

ISMS EVALUATION:

F4 Perform Work Within Controls

P3 Competence Commensurate with Responsibility

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 6A-1. BJC will evaluate available expertise against program requirements and recommend staffing levels of BJC and subcontractors to ensure that environmental program goals can be effectively achieved.

Corrective Action 6A-2. BJC will appoint an Environmental ALARA Program Manager for PORTS.

The Environmental ALARA Program Manager will have experience and qualifications in environmental health physics and environmental radiological protection standards. He/she will be responsible for preparing the Portsmouth Environmental ALARA Plan and coordinating the bi-monthly technical integration sessions with the appropriate managers. The Environmental ALARA Program Manager will report functionally in the BJC ES&H organization.

Corrective Action 6A-3. BJC will prepare and submit an Environmental ALARA Plan for PORTS to the DOE PORTS Site Office for approval, incorporating requirements equivalent to DOE Order 5400.5 as a best management practice.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 6A-1. Jim King
Corrective Action 6A-2. Rick Dearholt
Corrective Action 6A-3. Carl Efird

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 6A-1. June 1, 2000
Corrective Action 6A-2. February 29, 2000
Corrective Action 6A-3. May 15, 2000

EXPECTED COMPLETION DATE:

Corrective Action 6A-1. September 30, 2000
Corrective Action 6A-2. September 30, 2000
Corrective Action 6A-3. July 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 6A-1. Staffing plan recommendation to DOE PORTS Site Office
Corrective Action 6A-2. Organizational announcement and copy of resume
Corrective Action 6A-3. Environmental ALARA Plan issued to DOE

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve BCPs and funding

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 6A-1. PAD CAP 14B
Corrective Action 6A-2. PAD CAP 2D-1 and PORTS CAP 4A-3
Corrective Action 6A-3. PAD CAP 2D-2 and PORTS CAP 4A-4
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #6 (PORTS-INV-00-06). Effective implementation of PORTS environmental programs has been limited by weaknesses in identification and communication of environmental requirements, insufficient numbers of professional environmental staff, and technical errors in analyses and reports.

AREA OF CONCERN 6B.

The requirements of DOE Orders 5400.1 and 5400.5 have not been included in the BJC contract.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Many of the requirements associated with DOE environmental . . . Page 17
- Not all requirements of DOE Order 5400.1 and 5400.5 are being . . . Page 17
- OR did not establish BJC contract standards consistent with . . . Page 17
- Some BJC technical personnel were not aware that DOE . . . Page 18
- Some DOE employees in OR and at PORTS who have line . . . Page 18
- Weaknesses exist in the PORTS Groundwater Protection Program . . . Page 18
- The network of wells included in the Plan is not distributed to all areas . . . Page 18

ISSUE #6 (PORTS-INV-00-06). Effective implementation of PORTS environmental programs has been limited by weaknesses in identification and communication of environmental requirements, insufficient numbers of professional environmental staff, and technical errors in analyses and reports.

AREA OF CONCERN 6B.

Many of the applicable and appropriate requirements associated with DOE environmental protection Orders 5400.1 and 5400.5 were not incorporated into the approved work smart standards set for the BJC contract.

ROOT CAUSE:
The root cause is Management Problem (6A) Inadequate Administrative Control, and (6B) Work Organization/Planning Deficiency.

6A Inadequate Administrative Control.
The current BJC contract did not factor in many of the requirements for procedural compliance with DOE Order 5400.1 and 5400.5 as specified in the *Safety Analysis Report* (SAR) for DOE-controlled nuclear facilities at PORTS. OR did not establish BJC contract standards consistent with this approved nuclear safety document.

6B Work Organization/Planning Deficiency. The process of identifying, communicating, and implementing environmental requirements has resulted in unclear understanding of requirements by DOE and BJC, establishment of environmental program documents with incorrectly cited requirements and compliance status information, and implementation problems.

BJC notes that there are several unique aspects of its M&I contract with the DOE. The M&I contract does not provide that BJC comply with all DOE directives. Specific ES&H requirements are tailored for the contract scope, maintained, and flowed down to subcontractors, as applicable. These ES&H requirements are contained in specific sets of WSS and Standard/Requirement Identification Documents as identified in the contract Baseline List of Required Compliance Documents. A guiding principle for the WSS process is that the approved set of standards shall be accepted by all Department Elements as the basis for the performance of work and of oversight [(Reference DOE M450.3-1, Section 2.c (5)]. BJC will incorporate equivalent requirements to DOE Orders not specifically addressed in the WSS.

ISMS EVALUATION:
F3 Develop and Implement Hazard Control
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 6B-1. Use the change control process of ORO Order 250, Chapter V to include where appropriate the addition of a select number of National Standards, Regulations, and DOE Orders to the WSS. This process is effective as evidenced by the number of revisions already made to the WSS set. To correct this issue and have enforceable requirements, the BJC contract may need to be modified. Once the appropriate additions to the WSS have been determined, to ensure that there are adequate ES&H standards in place to protect the workers, the public, and the environment; a change process to the BJC contract will be initiated.

Corrective Action 6B-2. Revise environmental monitoring program documents, including the EMP and IGWMP, to include additional radionuclides, locations, and media and the rationale for selection and evaluation of data while ensuring addition of requirements equivalent to those contained in DOE 5400.1 and 5400.5.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 6B-1. Danny Whitaker-Sheppard
Corrective Action 6B-2. Don Wilkes

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 6B-1. September 30, 2000
Corrective Action 6B-2. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 6B-1. June 1, 2001
Corrective Action 6B-2. September 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 6B-1. Signed contract modification
Corrective Action 6B-2. Revised IGWMP and EMP issued to DOE

DOE SUPPORT ACTION REQUIRED? (specify)

DOE must approve BCPs and funding

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 6B-1. PORTS CAP 4A-1 and PORTS CAP 5A-1, 8A-1
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #7 (PORTS-INV-00-07). The Bechtel Jacobs ISMS supplement, which specifies elements and requirements on how to plan and execute work, is not effectively implemented at the working level.

AREA OF CONCERN 7A.

Deficiencies in programs and implementation of ISMS elements, such as properly defining work, identifying hazards, and developing and adhering to controls, require additional DOE and BJC management attention.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- There were many cases where work was not adequately defined. Page 27
- During interviews, craft workers could not define thresholds for . . . Page 27
- In numerous work packages, administrative requirements were not . . . Page 29
- The pre-job briefings observed for plant services maintenance were . . . Page 29
- BJC procedure PO-FM-P2209, *Maintenance Management*, . . . Page 29
- Training deficiencies in lockout/tagout resulted in observed . . . Page 29
- Safety significant deficiencies were identified during observation of . . . Page 29
- Feedback and improvement systems required by DOE Policy 450.4, . . . Page 30
- During one safety topic discussion, three of 16 craft workers were . . . Page 30

ISSUE #7 (PORTS-INV-00-07). The Bechtel Jacobs ISMS supplement, which specifies elements and requirements on how to plan and execute work, is not effectively implemented at the working level.

AREA OF CONCERN 7A.

Deficiencies in programs and implementation of ISMS elements, such as properly defining work, identifying hazards, and developing and adhering to controls, require additional DOE and BJC management attention.

ROOT CAUSE:
The root cause is Management Problem (6E) Policies not Adequately Defined leading to (6B) Work Organization/Planning Deficiency, and (5B) Training Deficiency.

5B Training Deficiency-Insufficient Practice and Use of ISMS Functions by Assigned Personnel.

6B Work Organization/Planning Deficiency. There are program planning and implementation deficiencies in work control processes in all five core ISMS functional areas that affect worker and facility safety.

6E Policies Not Adequately Enforced. Procedural requirements receive little if any management attention at the working level to ensure proper implementation and adherence to safe working rules.

The subcontractor, which had just taken over responsibilities for work in the areas discussed in this issue, had not fully implemented all policies and procedures associated with the ISM Description Documents. The corrective actions below will address these issues.

ISMS EVALUATION:
All Core Functions
P3 Competence Commensurate with Responsibility

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 7A-1. Review and revise subcontract specifications, as required, to require hazard assessment changes be approved by BJC prior to initiation of work with hazardous materials or in hazardous areas.

Corrective Action 7A-2. Develop and implement ISMS performance criteria for use by Subcontract Technical Representatives (STRs) and Safety Advocates (SAs) in performing subcontractor ES&H evaluations.

Corrective Action 7A-3. Develop and implement specific tools for conducting oversight of ISMS implementation in the field.

Corrective Action 7A-4. Provide training to all STRs and SAs on available ISMS oversight tools.

Corrective Action 7A-5. Analyze feedback from oversight activities and compile results.

Corrective Action 7A-6. Provide refresher training on ISMS Program to all BJC employees and all subcontractors at PORTS.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 7A-1. Daryl Mills
Corrective Action 7A-2. Daryl Mills
Corrective Action 7A-3. Susan Kimmerly
Corrective Action 7A-4. Susan Kimmerly
Corrective Action 7A-5. Susan Kimmerly
Corrective Action 7A-6. Rick Dearholt

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 7A-1. February 23, 2000
Corrective Action 7A-2. N/A
Corrective Action 7A-3. N/A
Corrective Action 7A-4. February 23, 2000
Corrective Action 7A-5. February 23, 2000
Corrective Action 7A-6. July 24, 2000

EXPECTED COMPLETION DATE:

Corrective Action 7A-1. August 31, 2000
Corrective Action 7A-2. Complete June 1, 2000
Corrective Action 7A-3. Complete June 1, 2000
Corrective Action 7A-4. June 30, 2000
Corrective Action 7A-5. August 30, 2000
Corrective Action 7A-6. August 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 7A-1. Documentation to include (1) list of subcontracts needing specification revisions regarding BJC approval of hazard assessment changes, (2) copy of revised subcontract language and (3) correspondence from procurement verifying that specified subcontract revisions are complete
Corrective Action 7A-2. Copy of the ISMS performance criteria
Corrective Action 7A-3. Copy of tool to be used to conduct oversight of ISMS implementation in the field
Corrective Action 7A-4. Copy of communication to STRs and SAs on the ISMS oversight tools
Corrective Action 7A-5. White Paper presenting the analysis and results of feedback from oversight activities
Corrective Action 7A-6. Copy of training materials used and attendance rosters

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 7A-1. ISM CAP SME-CON-3.1-OFI.1
Corrective Action 7A-2. ISM CAP OP.1-5-OFI.2
Corrective Action 7A-3. ISM CAP DOE Office of Oversight-Related OFI
Corrective Action 7A-4. ISM CAP DOE Office of Oversight-Related OFI
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #7 (PORTS-INV-00-07). The Bechtel Jacobs ISMS supplement, which specifies elements and requirements on how to plan and execute work, is not effectively implemented at the working level.

AREA OF CONCERN 7B.

A formal and fully effective work control process has not been implemented by BJC or its field services subcontractor.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- There were many cases where work was not adequately defined. Page 27
- While "Trouble Shoot and Repair" is a common term, there were no . . . Page 27
- In some cases, workers had to have the maintenance supervisor call the . . . Page 27
- A documented priority system, required by procedure PO-WP-2208, . . . Page 29
- In numerous work packages, administrative requirements were not . . . Page 29
- There were training deficiencies on the SOMAX computerized work . . . Page 29

ISSUE #7 (PORTS-INV-00-07). The Bechtel Jacobs ISMS supplement, which specifies elements and requirements on how to plan and execute work, is not effectively implemented at the working level.

AREA OF CONCERN 7B.

A formal and fully effective work control program encompassing both work practices and work control documentation has not been implemented by BJC or its field services subcontractor.

ROOT CAUSE:
The root cause is Management Problem (6E) Policies Not Adequately Enforced leading to (6B) Work Organization/Planning Deficiency, and (5B) Training Deficiency.

5B Training Deficiency-Insufficient Practice and Use of ISMS Functions by Assigned Personnel.

6B Work Organization/Planning Deficiency. There are program planning and implementation deficiencies in work control processes in all five core ISMS functional areas that affect worker and facility safety.

6E Policies for employees who have line management oversight responsibility for work control standards have not be adequately defined, disseminated, enforced, or implemented.

The subcontractor, which had just taken over responsibilities for work in the areas discussed in this issue, had not fully implemented all policies and procedures associated with the ISM Description Documents. The corrective actions below will address these issues.

ISMS EVALUATION:
F4 Perform Work Within Controls
P1 Line Management for Safety

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 7B-1. Implement the requirements for feedback and improvement systems as required by DOE Policy 450.4, Integrated Safety Management, for plant services, maintenance and waste operations day-to-day work activities that are conducted by BJC and subcontractor employees.

Corrective Action 7B-2. Incorporate requirements equivalent to procedure FS-A-0001, *Work Control Requirements*, into the subcontract Proforma document.

Corrective Action 7B-3. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on implementation of the work control process by both BJC and subcontractors.

Corrective Action 7B-4. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on the implementation of the work control process.

Corrective Action 7B-5. Provide training to supervisors on Work Control Process.

Corrective Action 7B-6. Review and revise subcontract specifications and/or Proforma to incorporate work control requirements into subcontract where fieldwork is being performed.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 7B-1. Jim King
Corrective Action 7B-2. Al Blocher
Corrective Action 7B-3. Jim King
Corrective Action 7B-4. Danny Whitaker-Sheppard
Corrective Action 7B-5. Don Igou
Corrective Action 7B-6. John Stone

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 7B-1. August 1, 2000
Corrective Action 7B-2. June 7, 2000
Corrective Action 7B-3. June 1, 2000
Corrective Action 7B-4. July 1, 2000
Corrective Action 7B-5. July 1, 2000
Corrective Action 7B-6. June 6, 2000

EXPECTED COMPLETION DATE:

Corrective Action 7B-1. September 30, 2000
Corrective Action 7B-2. July 10, 2000
Corrective Action 7B-3. October 30, 2000
Corrective Action 7B-4. October 30, 2000
Corrective Action 7B-5. July 31, 2000
Corrective Action 7B-6. August 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 7B-1. Phase 2 validation will demonstrate closure
Corrective Action 7B-2. Excerpts from the subject Proforma document(s), highlighting portions that incorporate the requirements of the current FS-A-0001, *Work Control Requirements*
Corrective Action 7B-3. Copies of Management Assessment Schedule and resulting report
Corrective Action 7B-4. Copies of Independent Assessment Schedule and resulting report
Corrective Action 7B-5. Copy of training material and attendance rosters
Corrective Action 7B-6. Documentation to include (1) list of all subcontracts requiring the incorporation of work control requirements, (2) applicable excerpts from Proforma documents and (3) correspondence from procurement verifying that the specified revisions have been issued.

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 7B-2. ISM CAP SME-MNT.3-1-OFI.1
Corrective Action 7B-3. PAD CAP 10A-1
Corrective Action 7B-4. PAD CAP 10A-2
Corrective Action 7B-6. ISM CAP SME-MNT.3-1-OFI.1
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8A.

BJC procedure PQ-A-1100, *Procedural Document Process*, describing the development, review, approval, and use of procedures does not adequately ensure quality procedure development and use of procedures by workers.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- The lists of events or activities requiring a procedure is not based on . . . Page 32
- Risk or hazard based criteria for determining the types of technical . . . Page 32
- Although the procedure requires verification and validation of . . . Page 32
- The procedure provides minimal guidance on use of procedures, does . . . Page 32

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8A.

BJC's procedure PQ-A-1100, *Procedural Document Process*, describing the development, review, approval, and use of procedures does not adequately ensure quality procedure development and use of procedures by workers. Consequently, emphasis on the rigorous conduct of operations necessary for PORTS hazard category 2 nuclear facilities is below the level of rigor assumed in the PORTS Safety Analysis Report (SAR).

ROOT CAUSE:
The root cause is Management Problem (6E) Policy Not Adequately Enforced leading to (6A) Inadequate Administrative Control and (2A) Defective or Inadequate Procedure.

2A Procedure Problem – Defective or Inadequate Procedure. The list of events or activities requiring a procedure is not based on the hazard level of the activity and does not address the use of a procedure as a hazard control. Verification and validation checklists or other suitable guidance are not provided for procedure verification.

6A Inadequate Administrative Control – The process for administratively controlling the use and modification of procedures failed to fully describe the SAR assumptions on procedures.

6E Policy Not Adequately Defined, Disseminated, or Enforced – BJC allowed the Plant Services, maintenance, and waste operations subcontractor to begin work without an established, implemented, and maintained conduct of operations program as required by the Technical Safety Requirements (TSRs) in the SAR.

The ORO ISM Verification Team previously identified this issue and procedure modification was in progress but not completed at the time of the DOE Oversight Investigation. The corrective actions below will address the issue.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 8A-1. Issue BJC-PQ-1102, *Performance Documents* and BJC-PQ-1104, *Procedure Process* to replace PQ-A-1100 *Procedural Document Process*. Complete company-wide Systems Integration Initiative to identify other related issues and implement systems improvement that incorporates the requirements of BJC-PQ-1102 and 1104.

Corrective Action 8A-2. Update, using the Unreviewed Safety Question (USQ) process, the SAR and TSR, to reflect requirements in procedures BJC-PQ-1102 and 1104.

Corrective Action 8A-3. Issue BJC Authorization Agreement Program procedure. (Additional detail regarding this procedure should be provided, as it is not referenced in the EH report or in this CAP).

Corrective Action 8A-4. Review and revise subcontract specification and/or Proforma to incorporate flow down requirements for Safety Authorization Basis (SAB) and Authorization Agreements into applicable subcontracts.

Corrective Action 8A-5. Ensure SAB adherence is incorporated, as applicable, into Subcontractor Oversight Plans, as required by PQ-A-1450, *Subcontractor Oversight.*

Corrective Action 8A-6. Revise DE-A-1102, *Safety Documentation*, to incorporate appropriate requirements for periodic review and update of SAB documentation.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 8A-1. Danny Whitaker-Sheppard
Corrective Action 8A-2. Ralph D'Antoni
Corrective Action 8A-3. B. Wilson
Corrective Action 8A-4. B. Wilson
Corrective Action 8A-5. B. Wilson
Corrective Action 8A-6. B. Wilson

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 8A-1. Issued June 16, 2000, effective July 14, 2000
Corrective Action 8A-2. June 1, 2000
Corrective Action 8A-3. June 1, 2000
Corrective Action 8A-4. June 1, 2000
Corrective Action 8A-5. June 1, 2000
Corrective Action 8A-6. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 8A-1. October 30, 2000
Corrective Action 8A-2. September 30, 2000
Corrective Action 8A-3. July 1, 2000
Corrective Action 8A-4. August 31, 2000
Corrective Action 8A-5. July 7, 2000
Corrective Action 8A-6. August 1, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 8A-1. Issued procedure BJC-PQ-1102 and 1104. Systems Integration Initiative relevant meeting minutes and implementing documents that show appropriate procedural requirements and promulgated throughout BJC and to subcontractor
Corrective Action 8A2. Approved Unreviewed Safety Question Determinations reflecting incorporation of BJC-PQ-1102 and 1104
Corrective Action 8A3. Copy of Authorization Agreement Program procedure
Corrective Action 8A4. Documentation to include (1) list of all subcontracts requiring incorporation of flowdown requirements of SABs and Authorization Agreements, (2) copy of updated Proforma language and (3) correspondence from procurement verifying that specified subcontract revisions are complete
Corrective Action 8A5. Copy of the Subcontractor Oversight Plan coversheet and excerpts regarding SAB adherence
Corrective Action 8A6. Copy of revised procedure DE-A-1102

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 8A-3. ISM CAP HAZ.5.4-OFI.13
Corrective Action 8A-4. ISM CAP HAZ.5.4-OFI.13, HAZ.5.1-OFI.4, HAZ.3.1-OFI.1
Corrective Action 8A-5. ISM CAP HAZ.2.4-OFI.2
Corrective Action 8A-6. ISM CAP HAZ.2.4-OFI.2

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8B.

BJC allowed WASTREN to issue and use procedures without an approved document change control process in place as required by 10 CFR 830.120 and the TSR and without a USQ review process in place as required by DOE Order 5480.21.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Consequently, several subcontractor procedures containing changes in . . . Page 32
- BJC allowed the plant services, maintenance, and waste . . . Page 32

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8B.

BJC allowed WASTREN to issue and use procedures without an approved document change control process in place as required by 10CFR830.120 and the TSR and without a USQ review process in place as required by DOE Order 5480.21.

ROOT CAUSE:
2B Lack of Procedure WASTREN did not have an approved procedure in place for document change control. The DOE Office of Oversight Report identified this issue, an Occurrence Report generated and work was suspended until approved procedures were in place.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P7 Hazard Control and Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 8B-1. WASTREN issued and completed training on the document change control process (PROC-1, *Procedures Process*) which includes the issuance, dissemination, control, and USQ review process as required by DOE Orders and subcontract language.

Corrective Action 8B-2. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include a monthly assessment that focuses on implementation of procedures in the field by both BJC and subcontractors.

Corrective Action 8B-3. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on implementation of procedures in the field by both BJC and subcontractors.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 8B-1. Don Igou
Corrective Action 8B-2. Jim King
Corrective Action 8B-3. Danny Whitaker-Sheppard

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 8B-1. March 15, 2000
Corrective Action 8B-2. June 1, 2000
Corrective Action 8B-3. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 8B-1. Complete April 4, 2000
Corrective Action 8B-2. October 30, 2000
Corrective Action 8B-3. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 8B-1. Copy of procedure PROC-1, *Procedure Process* and training roster
Corrective Action 8B-2. Revised Management Assessment Schedule and issued assessment report on implementation of procedure
Corrective Action 8B-3. Revised Independent Assessment Schedule and issued assessment report on implementation of procedures

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 8B-2. PAD CAP 10A-1
Corrective Action 8B-3. PAD CAP 10A-2

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8C.

WASTREN procedure PO-SM-P2208, *Work Control* lacks the detail necessary to ensure quality work control practices.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- The subcontractor work control procedure lacks the detail necessary . . . Page 32

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8C.

WASTREN procedure PO-SM-P2208, *Work Control* lacks the detail necessary to ensure quality work control practices.

ROOT CAUSE:
2A Procedure Problem – Defective or Inadequate Procedure.
There were numerous deficiencies contained in the procedure that were considered essential to the successful performance of work activities. Modification of the procedure as identified below will correct this issue.

ISMS EVALUATION:
F1 Define the Scope Work
P6 Hazard Control Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 8C-1. WASTREN will revise procedure PO-SM-P2209, *Work Control*, to incorporate requirements equivalent to BJC procedure FS-A-0001, *Work Control Requirements* and include details of the use of SOMAX computerized work control system.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 8C-1. Don Igou

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 8C-1. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 8C-1. July 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 8C-1. Copy of procedure PO-SM-P2209, *Work Control*

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 8C-1. PORTS CAP 7B-1 and PORTS CAP 7B-4

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8D.

Radiological control activities are not always conducted according to established technical standards, procedures, or administrative controls.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Some Lockheed Martin procedures currently used for radiological . . . Page 33
- No equivalent procedures that have been screened for USQs as required . . Page 33

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8D.

Radiological control activities are not always conducted according to established technical standards, procedures, or administrative controls.

ROOT CAUSE:
The root cause is Management Problem (6A) Inadequate Administrative Controls leading to (2A) Defective or Inadequate Procedures.

2A Defective or Inadequate Procedures – Some Lockheed Martin procedures used for radiological control equipment calibration have not been reviewed and approved for use by the BJC PORTS radiological control organization.

6A Inadequate Administrative Controls - Personnel in the Radiological Control Organization failed to ensure the procedures associated with equipment calibration were subject to the USQ Screening Process.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 8D-1. Issue Policy 10, Discipline and Rigor of Operations, which established expectations for the BJC employees and subcontractors to carry out their work in a formal and systematic approach that embodies a commitment to both safety and excellence in operations. Specially addressed is the adherence to procedures. This policy will be in the required reading program to be read by all BJC and subcontractor employees.

Corrective Action 8D-2. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on procedure implementation of radiological control activities by both BJC and subcontractors.

Corrective Action 8D-3. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on procedure implementation of radiological control activities.

Corrective Action 8D-4. Screen all equivalent procedures for USQs as required by DOE Order 5480.12 for procedures used by the radiological control organization to ensure they are consistent with the intent of 10 CFR 830.120. In cases where deficiencies are found, update, disseminate, and implement revised procedures.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 8D-1. Joe Nemec
Corrective Action 8D-2. Jim King
Corrective Action 8D-3. Danny Whitaker-Sheppard
Corrective Action 8D-4. Ralph D'Antoni

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 8D-1. March 19, 2000, effective June 12, 2000
Corrective Action 8D-2. June 1, 2000
Corrective Action 8D-3. June 1, 2000
Corrective Action 8D-4. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 8D-1. September 30, 2000
Corrective Action 8D-2. October 30, 2000
Corrective Action 8D-3. October 30, 2000
Corrective Action 8D-4. August 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 8D-1. Issued Policy 10, Discipline and Rigor of Operations, and completed required reading attendance sheets
Corrective Action 8D-2. Revised Management Assessment Schedule and issued assessment report on implementation of procedure
Corrective Action 8D-3. Revised Independent Assessment Schedule and issued assessment report on implementation of procedures
Corrective Action 8D-4. Copy of Screening Documentation

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8E.

Some industrial hygiene procedures have not been fully implemented.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- For example, a number of the responsibilities assigned to line managers, . . Page 33
- Examples include worker area hazard communication training, labeling . . . Page 33

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8E.

A number of line management, health services, and training responsibilities have not been implemented in accordance with industrial hygiene procedures.

ROOT CAUSE:
6B Work Organization/Planning Deficiency – Tasks associated with assuming line management responsibilities in a number of industrial hygiene procedures have not been adequately stipulated or implemented.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P1 Line Management Responsibility for Safety

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 8E-1. Conduct training for personnel assigned responsibilities in the following procedures: Hazard Communications, Bloodborne Pathogens, Ergonomics, Occupational Noise Exposure, Hearing Conservation, and Workplace Sampling.

Corrective Action 8E-2. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment on the implementation of the Hazard Communication Program, Bloodborne Pathogens, Ergonomics, Occupational Noise Exposure, Hearing Conservation, and Workplace Sampling, as applicable.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 8E-1. Glenn Brego
Corrective Action 8E-2. Jim King

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 8E-1. May 1, 2000
Corrective Action 8E-2. May 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 8E-1. August 30, 2000
Corrective Action 8E-2. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 8E-1. Copies of training materials and attendance rosters
Corrective Action 8E-2. Copy of revised Management Assessment Schedule and issued assessment report on implementation of procedure

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #9 (PORTS-INV-00-09). Bechtel Jacobs has not implemented an effective readiness assessment process, as stated in the ISMS supplement.

AREA OF CONCERN 9A.

Weaknesses in the Readiness Assessment Process.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- BJC did not perform a readiness assessment as required by . . . Page 33
- During the recent OR ISMS combined Phase I and II verification of . . . Page 33
- Although the ISMS supplement . . . Page 33

ISSUE #9 (PORTS-INV-00-09). Bechtel Jacobs has not implemented an effective readiness assessment process, as stated in the ISMS supplement.

AREA OF CONCERN 9A.

Lack of adherence to DOE and BJC/OR Readiness Assessment Policy and implementation of defective procedures allowed the plant services, maintenance, and waste operations subcontractor to assume operation of hazard category 2 nuclear facilities prior to ensuring line management readiness for safe nuclear operations.

ROOT CAUSE:
The root cause is Management Problem (6E) Policy not Adequately Defined leading to (6A) Inadequate Administrative Control, (6B) Work Organization/Planning Deficiency, and (2A) Defective or Inadequate Procedure.

2A Procedure Problem – Defective or Inadequate Procedure. The ISMS Supplement (BJC/OR-146, Integrated Safety Management System Supplement of July 1999) requires an evaluation of readiness when there is a change in contractor or major subcontractor. BJC procedure PQ-A-1510, *Readiness Evaluations*, does not provide criteria to ensure that readiness evaluations are considered in the subcontracting process.

6A Inadequate Administrative Control. Effective administrative controls, properly implemented, would have prevented the development of procedures that omitted the requirements pertaining to readiness assessments for Category 2 nuclear facilities.

6B Work Organization/Planning Deficiency. All work associated with the planning, scoping, assignment, and scheduling of work regarding the conduct of the required readiness assessments prior the subcontractor assuming control of operations should have been conducted as a line management responsibility in accordance with BJC-OR-146, DOE Order 425.1A, and DOE-STD-3006-95.

6E Policy Not Adequately Defined. The policy for the conduct of readiness assessments prior to facility turn-over for operations, especially in the case of category 2 nuclear facilities, is not properly defined.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P1 Line Management Responsibility for Safety

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 9A-1. Review and revise PQ-A-1510, *Readiness Evaluations*, to include requirements for effective readiness evaluations prior to operational transition of any category 2 facility to a subcontractor.

Corrective Action 9A-2. Conduct a readiness evaluation of all hazard category 2 nuclear facilities under the control of DOE and BJC that have been operationally transferred subcontractors in accordance with the requirements contained in BJC/OR-146, DOE Order 425.1A, DOE-STD-3006-95, and procedure PQ-A-1510.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 9A-1. Dan Longpre
Corrective Action 9A-2. Dan Longpre

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 9A-1. Issued April 19, 2000, effective June 30, 2000
Corrective Action 9A-2. August 15, 2000

EXPECTED COMPLETION DATE:

Corrective Action 9A-1. June 30, 2000
Corrective Action 9A-2. December 29, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 9A-1. Copy of revised procedure
Corrective Action 9A-2. Copy of completed readiness evaluation

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 9A-2. PORTS CAP 8A-1
Corrective Action 9A-3. PORTS CAP 7A-6
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #10 (PORTS-INV-00-10). Incomplete radiological characterization of the workplace adversely affects the radiological control organization's ability to identify hazards and institute controls necessary to ensure consistent and appropriate radiological protection for workers.

AREA OF CONCERN 10A.

Lack of facility-specific isotopic or radiological contamination characterization and analysis has not been conducted nor has the data from previous efforts been incorporated into a single current program document.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- The lack of facility-specific isotopic data adversely impacts . . . Page 34
- . . . the effectiveness and accuracy of the air sampling, . . . Page 35
- . . . accuracy of the contamination control program . . . Page 35
- . . . accuracy of the bioassay/dosimetry program . . . Page 35
- Therefore, hazard analysis may . . . Page 35

ISSUE #10 (PORTS-INV-00-10). Incomplete radiological characterization of the workplace adversely affects the radiological control organization's ability to identify hazards and institute controls necessary to ensure consistent and appropriate radiological protection for workers.

AREA OF CONCERN 10A.

Facility-specific isotopic or radiological contamination characterization and analysis has not been conducted nor has the data from previous efforts been incorporated into a single current program document.

ROOT CAUSE:

The root cause is Management Problem (6B) Work Organization/Planning Deficiency leading to (6D) Improper Resource Allocation.

6B, Work Organization/Planning Deficiency. Lack of management planning and priority in the area of radiological control hazard assessment has impacted the site's ability to generate facility-specific isotopic data.

6D, Improper Resource Allocation. Interviews with radiological control management revealed that determinations of need for this data and requests for funds were carried out over a three-year period, however, no appropriate priority to this request was made.

ISMS EVALUATION:

F1 Define the Scope of Work
F2 Analyze the Hazards
F3 Develop and Implement Hazard Controls
F4 Perform Work Within Controls

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 10A-1. Phase 1: Update maps of all areas for which BJC is responsible to delineate all of those outdoor areas and buildings or other structures that have radiological postings or unposted areas with known radiological contamination above specified background levels.

Corrective Action 10A-2. Phase 2: Use existing data to determine the radionuclides and lung solubility class expected to be present in each posted area. Both radionuclides identity and lung solubility class information are required to accurately characterize the hazard. This data will be presented on maps and supported by a documented evidence file containing the reference data and reports. BJC will also identify those areas where there is insufficient data in order to determine the identity of the radionuclides and/or the lung solubility class.

Corrective Action 10A-3. Phase 3: Prepare and implement a sampling plan and schedule to be used to obtain the additional data identified in Phase 2. Rationale for the sample program and schedule will be included.

Corrective Action 10A-4. Prepare and disseminate maps, data, and required reading that includes all validated data from previous efforts to radiologically characterize the site.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 10A-1. Steve Green
Corrective Action 10A-2. Steve Green
Corrective Action 10A-3. Steve Green
Corrective Action 10A-4. Steve Green

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 10A-1. June 7, 2000
Corrective Action 10A-2. June 7, 2000
Corrective Action 10A-3. June 7, 2000
Corrective Action 10A-4. June 7, 2000

EXPECTED COMPLETION DATE:

Corrective Action 10A-1. September 30, 2000
Corrective Action 10A-2. November 30, 2000
Corrective Action 10A-3. June 30, 2001
Corrective Action 10A-4. June 30, 2001

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 10A-1. BJC letter of completion for Phase 1 maps, data, and required reading
Corrective Action 10A-2. BJC letter of completion for Phase 2 maps, data, and required reading
Corrective Action 10A-3. BJC letter of completion for Phase 3 maps, data, and required reading
Corrective Action 10A-4. Maps, data, and required reading

DOE SUPPORT ACTION REQUIRED? (specify)

DOE-ORO must approve a BCP for implementation of all three corrective actions

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 10A-1. PAD CAP 7A-1
Corrective Action 10A-2. PAD CAP 7A-2
Corrective Action 10A-3. PAD CAP 7A-3
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #10 (PORTS-INV-00-10). Incomplete radiological characterization of the workplace adversely affects the radiological control organization's ability to identify hazards and institute controls necessary to ensure consistent and appropriate radiological protection for workers.

AREA OF CONCERN 10B.

The radiological protection program relies on personnel knowledge and limited waste isotopic data to establish radiological controls rather than a documented technical basis. This is a programmatic weakness in the radiological protection program that needs to be properly formalized with an increased level of discipline and rigor.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Consequently, isotopic characterization of facilities and operations.. Page 35
- Therefore, hazard analysis may rely upon incomplete . . . Page 35
- . . . plans to undertake radiological characterization activities . . . Page 35

ISSUE #10 (PORTS-INV-00-10). Incomplete radiological characterization of the workplace adversely affects the radiological control organization's ability to identify hazards and institute controls necessary to ensure consistent and appropriate radiological protection for workers.

AREA OF CONCERN 10B.

The radiological protection program relies on personal knowledge and limited waste isotopic data to establish radiological controls, rather than a documented technical basis. This is a programmatic weakness in the radiological protection program.

ROOT CAUSE:

3A Personnel Error – Inattention to Detail

There was evidence that radiological control personnel had not used adequate attention to the details of the tasks. The failure to routinely update the technical basis and the reliance on personal knowledge led to this issue.

6B Work Organization/Planning Deficiency. The work of radiological control management should focus on the development and establishment of a documented technical bases for the radiological control program. Data from previous characterization efforts, combined with validated isotopic characterization data for all facilities, should form the technical bases from which radiological controls are then instituted.

ISMS EVALUATION:

F1 Define the Scope of Work

F2 Analyze the Hazards

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 10B-1. On the basis of facility-specific isotopic data, update the technical basis for establishing radiological controls.

Corrective Action 10B-2. Issue Policy 10, Discipline and Rigor of Operations which establishes expectations for the BJC employees and subcontractors to carry out their work in a formal and systematic approach that embodies a commitment to both safety and excellence in operations. Specially addressed is the adherence to procedures. This policy will be in the required reading program to be read by all BJC and subcontractor employees.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 10B-1. Steve Green

Corrective Action 10B-2. Joe Nemec

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 10B-1. September 1, 2000

Corrective Action 10B-2. March 19, 2000, effective June 12, 2000

EXPECTED COMPLETION DATE:

Corrective Action 10B-1. July 30, 2001

Corrective Action 10B-2. September 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 10B-1. Copy of updated technical basis document
Corrective Action 10B-2. Copy of required reading attendance sheets

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 10B-1: PORTS CAP 8D-1
Corrective Action 10B-2: PORTS CAP 8D-1
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #11 (PORTS-INV-00-11). There is a lack of rigor, formality, and discipline in the development, maintenance, and implementation of the Bechtel Jacobs radiation protection program that impacts effective control of the hazards associated with radiological work.

AREA OF CONCERN 11A.

The RWP program at PORTS is not always consistently implemented.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- The RWP program at PORTS is not . . . Page 35
- Cases were identified where the RWP program gave workers . . . Page 35
- . . . conditions reflect the current radiological postings in the . . . Page 35
- Many surveys used for radiological control purposes were not . . . Page 35
- BJC routinely uses historical radiological survey data . . . Page 35
- BJC has not assured that health physics requirements . . . Page 35
- In addition, the investigation team identified cases where . . . Page 35
- Incomplete hazard information is sometimes used to develop . . . Page 35
- . . . RWPs were developed solely upon verbal information . . . Page 35
- . . . Management initiatives for RWP compliance have not been . . . Page 35
- Changes in RWP development processes were implemented . . . Page 36

ISSUE #11 (PORTS-INV-00-11). There is a lack of rigor, formality, and discipline in the development, maintenance, and implementation of the Bechtel Jacobs radiation protection program that impacts effective control of the hazards associated with radiological work.

AREA OF CONCERN 11A.

The radiation work permit (RWP) program at PORTS is not always consistently implemented. The following inconsistencies were noted: workers were given inaccurate radiological information pertaining to work area conditions; the health physics requirements for BJC personnel accessing USEC facilities are not effectively captured by the RWP program; incomplete hazard information is sometimes used to develop RWPs; management initiatives for RWP compliance have not been totally effective; and changes in RWP development processes were attempted without issuing procedural guidance to personnel responsible for program implementation.

ROOT CAUSE:
The root cause is Management Problems (6A) Inadequate Administrative Control leading to (5D) Inadequate Training and (2A) Inadequate Procedures.

2A Procedure Problems-Inadequate Procedures/6A Inadequate Administrative Control/5D Inadequate Refresher Training

The root cause was identified as inadequate procedure problem, with contributing causes as training deficiencies and improper resource allocation.

ISMS EVALUATION:
F2 Analyze the Hazards
F3 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements
P5 Hazard Control Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 11A-1. Revise procedure SH-A-4030, *Entry Control* to require mandatory review of all RWPs by the Project Health Physicist, Radiation Engineer, or Site Dosimetry Coordinator for bioassay requirements.

Corrective Action 11A-2. Increase professional level staffing by two personnel, radiological engineers, with responsibilities for project interface, schedule oversight, and initiation of all RWPs.

Corrective Action 11A-3. Provide enhanced training to all SEC radiation control (RADCON) personnel on specific requirements of procedure SH-A-4030, *Entry Control.*

Corrective Action 11A-4. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment of the Radiation Control program.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 11A-1. Steve Green
Corrective Action 11A-2. Rick Dearholt
Corrective Action 11A-3. Mike Eversole
Corrective Action 11A-4. Danny Whitaker-Sheppard

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 11A-1. January 29, 2000
Corrective Action 11A-2. January 29, 2000
Corrective Action 11A-3. April 1, 2000
Corrective Action 11A-4. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 11A-1. Completed March 15, 2000
Corrective Action 11A-2. Completed May 15, 2000
Corrective Action 11A-3. Completed April 13, 2000
Corrective Action 11A-4. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 11A-1. Copy of procedure SA-A-4030
Corrective Action 11A-2. Copies of resumes for Radiation Engineers assigned
Corrective Action 11A-3. Copies of training material and attendance rosters
Corrective Action 11A-4. Revised Independent Assessment Schedule and issued assessment report on implementation of procedures

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 11A-1. PAD CAP 7B
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Comports in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #11 (PORTS-INV-00-11). There is a lack of rigor, formality, and discipline in the development, maintenance, and implementation of the Bechtel Jacobs radiation protection program that impacts effective control of the hazards associated with radiological work.

AREA OF CONCERN 11B.

Deficiencies exist in the conduct and documentation of radiological surveys.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Deficiencies exist in the conduct and documentation of . . . Page 36
- . . . this survey was recreated from memory rather than from field . . . Page 36
- The investigation team identified incomplete radiological surveys . . Page 36
- . . . the survey results may not reflect actual radiological . . . Page 36
- Radiological surveys often indicate numeric . . . Page 36

ISSUE #11 (PORTS-INV-00-11). There is a lack of rigor, formality, and discipline in the development, maintenance, and implementation of the Bechtel Jacobs radiation protection program that impacts effective control of the hazards associated with radiological work.

AREA OF CONCERN 11B.

Deficiencies exist in the conduct and documentation of radiological surveys. The EH Investigation Team noted cases where radiological survey data were recreated from memory instead of field notes or other documentation. Several examples were noted of survey data entries of numeric measurements below minimum detectable activity (MDA), critical detection level, or lower limit of detection for the survey instruments in use.

ROOT CAUSE:
The root cause is (5A) Insufficient Training leading to (2A) Inadequate Procedures.

5ATraining Deficiency/ 2A Defective or Inadequate Procedure.

There was evidence that this condition/issue could be directly traced to insufficient training, which would impact the ability to perform a task adequately.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 11B-1. Conduct training on the requirements of SH-B-4011, *Radiation Surveys* for all SEC RADCON personnel.

Corrective Action 11B-2. Modify survey forms to allow inclusion of data less than the critical detection level (Lc) as well as the Lc number.

Corrective Action 11B-3. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include a management assessment that focuses on implementation of procedures in the field by both BJC and subcontractors pertaining to radiation surveys.

Corrective Action 11B-4. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment of each project and function that focuses on procedure implementation pertaining to surveys. The end of the FY will complete the assessments.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 11B-1. Mike Eversole
Corrective Action 11B-2. Mike Eversole
Corrective Action 11B-3. Jim King
Corrective Action 11B-4. Danny Whitaker-Sheppard

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 11B-1. April 1, 2000
Corrective Action 11B-2. April 1, 2000
Corrective Action 11B-3. June 1, 2000
Corrective Action 11B-4. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 11B-1. Completed April 27, 2000
Corrective Action 11B-2. Completed May 31, 2000
Corrective Action 11B-3. October 30, 2000
Corrective Action 11B-4. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 11B-1. Copy of training material and attendance rosters
Corrective Action 11B-2. Copy of new survey forms
Corrective Action 11B-3. Copy of revised Management Assessment Schedule and issued assessment report on implementation of procedure
Corrective Action 11B-4. Copy of revised Independent Assessment Schedule and issued assessment report on implementation of procedures

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 11B-3. PORTS CAP 8D-2
Corrective Action 11B-4. PORTS CAP 8D-3

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #11 (PORTS-INV-00-11). There is a lack of rigor, formality, and discipline in the development, maintenance, and implementation of the Bechtel Jacobs radiation protection program that impacts effective control of the hazards associated with radiological work.

AREA OF CONCERN 11C.

The use of Thermoluminescent Dosimeters (TLDs) is inconsistent with DOE requirements.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- The use of TLDs is inconsistent with DOE requirements . . . Page 36
- BJC permits individuals to work at different . . . Page 36
- In addition, USEC employees who perform work for DOE . . . Page 36

ISSUE #11 (PORTS-INV-00-11). There is a lack of rigor, formality, and discipline in the development, maintenance, and implementation of the Bechtel Jacobs radiation protection program that impacts effective control of the hazards associated with radiological work.

AREA OF CONCERN 11C.

The use of Thermoluminescent Dosimeters (TLDs) is inconsistent with DOE requirements. DOE radiation exposure reporting requirements stipulate the use of dosimeters that are accredited by the DOE Laboratory Accreditation Program. BJC does not strictly enforce these requirements. As a result, USEC personnel working on BJC-managed sites frequently use dosimeters that do not comply with DOE accreditation requirements, however, they do use NAVLAP approved dosimetry (NRC approval).

ROOT CAUSE:
The root cause is a Management Problem (6A).
6A Inadequate Administrative Controls. USEC personnel working on BJC managed sites frequently use dosimeters issued to them, which are not accredited by the DOE Laboratory Accreditation Program. BJC is not enforcing the requirements of the DOE Laboratory Accreditation Program.

This inconsistency can be addressed by preparing a request for exemption, as presented below.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 11C-1. BJC has prepared an exemption request from 10 CFR 835 that proposes that the USEC employees are permitted to use NAVLAP dosimeters when DOE services are performed by USEC employees.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 11C-1. Steve Green

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 11C-1. Submitted April 6, 2000

EXPECTED COMPLETION DATE:

Corrective Action 11C-1. September 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 11C-1. Copy of approved exemption

DOE SUPPORT ACTION REQUIRED? (specify)

Approve exemption request

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 11C-1, PAD CAP 8I
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #12 (PORTS-INV-00-12). The PORTS radiological air sampling program does not fully support the detection and evaluation of either the level or the concentration of airborne radioactive material at work locations.

AREA OF CONCERN 12A.

The absence of approved procedures for air monitoring equipment calibration and the inadequate implementation of the sample analysis and DAC hour determination prevents the air sampling program from being fully implemented.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- The absence of approved procedures for air monitoring . . . Page 37
- The investigation team observed the use of unapproved . . . Page 37
- Radiological air monitoring program elements as required by . . . Page 37
- . . . some radiological air sampling procedures were inadequate . . . Page 37
- Procedures and protocols have not been established to accomplish . . Page 37
- SEC Radiation Control failed to take corrective action when program . . . Page 38

ISSUE #12 (PORTS-INV-00-12). The PORTS radiological air sampling program does not fully support the detection and evaluation of either the level or the concentration of airborne radioactive material at work locations.

AREA OF CONCERN 12A.

The absence of approved procedures for air monitoring equipment calibration and the inadequate implementation of the sample analysis and Derived Air Concentration (DAC) hour determination prevents the air-sampling program from being fully implemented.

ROOT CAUSE:
2A Procedure Problem-Lack of Procedure.
There were no written procedures in place to perform this activity.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
F5 Provide Feedback and Continuous Improvement

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 12A-1. Revise RADCON Operations Guide to clarify and provide specific instructions in the manner in which DAC hour determination, equipment calibration, and tracking will be performed.

Corrective Action 12A-2. All procedures pertaining to air monitoring equipment have been issued and all employees that utilize this equipment have been trained. Procedures include:

- SH-C-4223, *Portable Instrument Response and Operability*
- SH-C-4447, *Air Sample Counting and Analysis*
- SH-C-4459, *Operation of the Low Volume Sampler*
- SH-C-4461, *Operation of the High Volume Air Sampler*
- SH-C-4463, *Operation of the Buck Personal Air Sampler*

Corrective Action 12A-3. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on procedure implementation of radiological control activities by both BJC and subcontractors.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 12A-1. Steve Green
Corrective Action 12A-2. Mike Eversole
Corrective Action 12A-3. Jim King

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 12A-1. November 30, 2000
Corrective Action 12A-2. March 20, 2000
Corrective Action 12A-3. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 12A-1. Complete February 1, 2000
Corrective Action 12A-2. Complete June 13, 2000
Corrective Action 12A-3. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 12A-1. Copy of appropriate section of Operations Guide
Corrective Action 12A-2. Copy of issued procedures SH-C-4223, 4459, 4447, 4461 and 4463, and completed required reading and training attendance logs
Corrective Action 12A-3. Copy of revised Independent Assessment Schedule and issued assessment report on implementation of procedures

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 12A-1. PAD CAP 8C and PORTS CAP 8D-2

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13A.

Work requests failed to identify and document all hazards for some work activities.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- . . . the hazard review for recent air handler . . . Page 39
- However, the work package did not address . . . Page 40
- Neither pre nor post transitional . . . Page 40

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13A.

Work requests failed to identify and document all hazards for some work activities. Hazards are not adequately identified in some hazard reviews, which are part of subcontractor work packages. Subcontractor workers were reported as entering non-permitted confined spaces without consideration or knowledge of confined space hazards.

ROOT CAUSE:
6E Management Problem-Planning Deficiency/5A Training Not Provided.
There were numerous deficiencies in the planning of work that lacked appropriate identification of all hazards in all work packages by supervisory personnel. The lack of training resulted in the inadequate identification of all hazards.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P6 Hazard Control Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 13A-1. Review and revise subcontract specifications, as required, to require hazard assessments and changes be approved by BJC.

Corrective Action 13A-2. Incorporate requirements of equivalent to procedure FS-A-0001, *Work Control Requirements*, into the subcontract Proforma document.

Corrective Action 13A-3. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on implementation of the work control process by both BJC and subcontractors.

Corrective Action 13A-4. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on the implementation of the work control process.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 13A-1. Daryl Mills
Corrective Action 13A-2. Al Blocher
Corrective Action 13A-3. Jim King
Corrective Action 13A-4. Danny Whitaker-Sheppard

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 13A-1. June 7, 2000
Corrective Action 13A-2. June 7, 2000
Corrective Action 13A-3. June 1, 2000
Corrective Action 13A-4. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 13A-1. August 31, 2000
Corrective Action 13A-2. July 10, 2000
Corrective Action 13A-3. October 30, 2000
Corrective Action 13A-4. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 13A-1. Documentation to include (1) list of subcontracts needing specification revisions regarding BJC approval of hazard assessment changes, (2) copy of revised subcontract language, and (3) correspondence from procurement verifying that specified subcontract revisions are complete.
Corrective Action 13A-2. Excerpts from the subject Proforma document(s), highlighting portions that incorporate the requirements of the current FS-A-0001, *Work Control Requirements*
Corrective Action 13A-3. Copy of revised Management Assessment Schedule and issued assessment report on implementation of procedure
Corrective Action 13A-4. Copy of revised Independent Assessment Schedule and issued assessment report on implementation of work control process

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 13A-1. ISM CAP SME-CON-3.1 OFI.1
Corrective Action 13A-2. ISM CAP SME-MNT.3-1-OFI.1
Corrective Action 13A-3. PORTS CAP 7A-1
Corrective Action 13A-4. PORTS CAP 7B-1
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #13 PORTS-INV-00-13. Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13B.

Chemical and toxic material hazards are not sufficiently characterized and documented for some work activities to ensure that appropriate controls are in place to preclude worker exposures and thresholds to involve industrial hygiene before work is performed.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Hazard identification and evaluation process . . . Page 40
- There are no established thresholds . . . Page 40

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13B.

Chemical and toxic material hazards are not sufficiently characterized and documented for some work activities to ensure that appropriate controls are in place to preclude worker exposures and thresholds to involve industrial hygiene before work is performed. Hazard identification and evaluation processes rely on workers memory rather than a documented technical basis.

ROOT CAUSE:
2A Procedure Problem – Defective or Inadequate Procedure.
The procedure did not require the technical basis to be documented in Hazard Analysis and was not required to be included in work packages.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements
P6 Hazard Control Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 13B-1. Review and revise procedure SH-A-5260, *Work Place Air Sampling*, in accordance with the requirements equivalent to DOE Order 440.1A to include technical basis documentation in the development of Hazard Analysis for inclusion in work packages.

Corrective Action 13B-2. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on air monitoring processes by both BJC and subcontractors.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 13B-1. R. Thompson
Corrective Action 13B-2. Jim King

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 13B-1. June 1, 2000
Corrective Action 13B-2. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 13B-1. September 30, 2000
Corrective Action 13B-2. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 13B-1. Copy of procedure revision
Corrective Action 13B-2. Copy of revised Management Assessment Schedule and issued assessment report on air monitoring processes

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

None

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13C.

Personal air sampling for hazardous chemicals is not routinely performed and key sampling parameters are not documented on the sample data form, the work procedure, and the job hazards analysis or elsewhere in the work package.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Some hazards are not periodically . . .
- On January 8, 2000, alumina material . . . Page 40
- Second, BJC subcontractors . . . Page 43
- Although air monitoring is performed . . . Page 40
- During volatile organic compounds sampling . . . Page 40

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13C.

Personal air sampling for hazardous chemicals is not routinely performed and key sampling parameters are not documented on the sample data form, the work procedure, and the job hazards analysis or elsewhere in the work package.

ROOT CAUSE:
3B Personnel Error – Procedure Not Used or Used Incorrectly.
There was a failure of subcontractors to use written instructions, procedures, or other documentation that were contained in their contracts.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 13C-1. The STRs of all subcontracts will remind, in writing, all subcontractors of the Exhibit G requirements pertaining to personal air sampling.

Corrective Action 13C-2. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on exposure assessments.

Corrective Action 13C-3. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on exposure assessments.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 13C-1. Don Igou
Corrective Action 13C-2. Jim King
Corrective Action 13C-3. Danny Whitaker-Sheppard

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 13C-1. June 1, 2000
Corrective Action 13C-2. June 1, 2000
Corrective Action 13C-3. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 13C-1. July 31, 2000
Corrective Action 13C-2. October 30, 2000
Corrective Action 13C-3. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 13C-1. Copy of signed documents and transmittals to subcontractor
Corrective Action 13C-2. Copy of revised Management Assessment Schedule and issued assessment report that focuses on exposure assessments
Corrective Action 13C-3. Copy of revised Independent Assessment Schedule and issued assessment report that focuses on exposure assessments

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

None

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13D.

Exposure assessments are not routinely documented for noise, airborne chemical hazards, and ergonomic hazards, nor are they periodically reevaluated or adequately documented to reflect changes in facility conditions.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- . . . a local DOE staff member identified that . . . Page 40
- Exposure assessments are not . . . Page 40
- Some hazards are not periodically . . . Page 40

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13D.

Exposure assessments are not routinely documented for noise, airborne chemical hazards, and ergonomic hazards, nor are they periodically reevaluated or adequately documented to reflect changes in facility conditions.

ROOT CAUSE:
3B Personnel Error – Procedure Not Used or Used Incorrectly.
Procedures were not routinely followed in certain industrial hygiene areas that required specific documentation of surveys.

ISMS EVALUATION:
F1 Define the Scope of Work
P6 Hazard Control Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

The training described in this corrective action will be to the current revision of the procedures. Note: These procedures are under review and any revision to them will require additional training. See Corrective Action 14A-1.

Corrective Action 13D-1. Conduct training sessions on the requirements contained in BJC procedures SH-A-5121, *Occupational Noise Exposure and Hearing Conservation Program*; SH-1-5260, *Work Place Air Sampling*; and SH-A-5133, *Ergonomics Program* for those personnel required to document exposure assessments.

Corrective Action 13D-2. Increase oversight staff in Industrial Hygiene Organization by one to ensure subcontractor compliance with documentation requirements.

Corrective Action 13D-3. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on exposure assessments by both BJC and subcontractors.

Corrective Action 13D-4. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on exposure assessments.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 13D-1. R. Thompson
Corrective Action 13D-2. R. Thompson
Corrective Action 13D-3. Jim King
Corrective Action 13D-4. Danny Whitaker-Sheppard

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 13D-1. June 1, 2000
Corrective Action 13D-2. June 1, 2000
Corrective Action 13D-3. June 1, 2000
Corrective Action 13D-4. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 13D-1. September 30, 2000
Corrective Action 13D-2. July 30, 2000
Corrective Action 13D-3. October 30, 2000
Corrective Action 13D-4. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 13D-1. Issued procedures SH-A-5121, SH-A-5260, SH-A-5133, and completed required reading and training attendance logs
Corrective Action 13D-2. Copies of resumes for assigned personnel
Corrective Action 13D-3. Copies of revised Management Assessment Schedule and issued assessment report that focuses on exposure assessments
Corrective Action 13D-4. Copies of revised Independent Assessment Schedule and issued assessment report that focuses on exposure assessments

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 13D-3. PORTS CAP 13C-2
Corrective Action 13D-4. PORTS CAP 13C-3

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13E.

MSDSs are not adequately managed or routinely referenced to identify potential chemical hazards.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- MSDSs are not adequately managed . . . Page 40

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13E.

MSDSs are not adequately managed or routinely referenced to identify potential chemical hazards.

ROOT CAUSE:
The root cause is (5D) Training Deficiency leading to (2A) Inadequate Procedure.
5D Training Deficiency-Insufficient Refresher Training/2A Inadequate Procedure.

The frequency of refresher training was not sufficient to maintain the required knowledge and skills. Additionally to ensure compliance with Code of Federal Regulations requirements to adequately convey hazard communications to affected employees, it was determined that a contributing cause was a procedure problem.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P6 Hazard Control Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 13E-1. Conduct Hazard Communication training for all personnel per the requirements of 29 CFR 1910.1200.

Corrective Action 13E-2. Review and revise BJC procedure SH-A-2010, Hazard Review, to require attachment of applicable MSDSs to activity hazard analyses (AHAs) prior to work starting.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 13E-1. Glenn Brego
Corrective Action 13E-2. Dennis Stevenson

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 13E-1. June 1, 2000
Corrective Action 13E-2. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 13E-1. September 30, 2000
Corrective Action 13E-2. September 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 13E-1. Copies of completed required reading and training attendance logs
Corrective Action 13E-2. Copy of issued revised procedure SH-A-2010 and completed submittal status sheet or log showing SA review and acceptance of AHAs

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

None

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14A.

Line managers are not familiar with their responsibilities as defined in safety and health programs/procedures. Procedures in these areas are deficient, as are clear roles and responsibilities between BJC and subcontractor personnel.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Line managers are not familiar with their line management . . . Page 41
- The responsibility for testing and maintaining these exhaust lines . . . Page 41
- Safety and health procedures . . . Page 41

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14A.

Line managers are not familiar with their responsibilities as defined in safety and health programs/procedures. Procedures in these areas are deficient and clear roles and responsibilities between BJC and subcontractor personnel are not defined.

ROOT CAUSE:
The root cause is Procedure Problem (2A) Inadequate Procedures with Training Problem (5A) No Training Provided as a contributing cause.

2A Procedure Problems-Inadequate Procedures
5DE Procedures Followed Incorrectly-Details Needs Improvement
5A Training Problem-No Training Provided

There were several deficiencies identified in the industrial hygiene procedures, specifically clear roles and responsibilities for BJC and subcontractor employees. Some safety training had not been performed.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P2 Clear Roles and Responsibilities

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 14A-1. Review and revise procedures in hazard communication, confined spaces, air sampling for hazardous chemical, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response to include clear roles and responsibilities between BJC and subcontractor personnel in accordance with the requirements of OSHA regulations in 29 CFR 1910.38, 1910.95, 1920.120.

Corrective Action 14A-2. Review and revise subcontract Proforma, as required, to include equivalent procedural requirements, as above.

Corrective Action 14A-3. Ensure training for all line managers, BJC and subcontractors, has been completed in hazard communication, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

Corrective Action 14A-4. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on the conduct of training.

Corrective Action 14A-5. Ensure training for all line managers, BJC and subcontractors has been completed in hazard communication, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response in accordance with the requirements of 29CFR 1910.1200.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 14A-1. Dennis Stevenson
Corrective Action 14A-2. Daryl Mills
Corrective Action 14A-3. Rick Dearholt
Corrective Action 14A-4. Jim King
Corrective Action 14A-5. Rick Dearholt

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 14A-1. June 1, 2000
Corrective Action 14A-2. June 1, 2000
Corrective Action 14A-3. June 1, 2000
Corrective Action 14A-4. June 1, 2000
Corrective Action 14A-5. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 14A-1. November 30, 2000
Corrective Action 14A-2. January 31, 2001
Corrective Action 14A-3. October 30, 2000
Corrective Action 14A-4. October 30, 2000
Corrective Action 14A-5. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 14A-1. Copies of issued revised procedures and completed required reading and training attendance logs
Corrective Action 14A-2. Copies of revised subcontract Proforma showing incorporation of applicable procedural requirements
Corrective Action 14A-3. Copies of completed required reading and training attendance logs
Corrective Action 14A-4. Copy of revised Independent Assessment Schedule and issued report that focuses on Conduct of Training
Corrective Action 14A-5. Copy of completed required reading and training attendance logs

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 14A. PORTS CAP 13D-1

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14B.

WASTREN is not compliant with all requirements of Exhibit G or their respective safety programs and key elements of some safety programs have not been developed at the subcontractor level.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- For example, personal air sampling is not being performed as . . . Page 41
- In addition, elements of the subcontractor's site-specific hazard . . . Page 42
- Furthermore, the subcontractor's ES&H Plan does not address . . . Page 42
- Key supporting elements of some of these safety programs, . . . Page 42

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14B.

WASTREN is not compliant with all requirements of Exhibit G or their respective safety programs and key elements of some safety programs have not been developed at the subcontractor level.

ROOT CAUSE:

6C Management Problem – Inadequate Supervision.

Inadequate techniques were used to direct the subcontractor and oversee the daily accomplishment of tasks, which resulted in the lack of implementation in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

ISMS EVALUATION:

F3 Develop and Implement Hazard Controls

P3 Competence Commensurate with Responsibility

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 14B-1. Notify WASTREN, in writing, of contractual requirements that are deficient.

Corrective Action 14B-2. Implement the WASTREN Subcontractor Oversight Plan developed pursuant to BJC procedure PQ-A-1450, *Subcontractor Oversight.*

Corrective Action 14B-3. WASTREN will modify their ES&H Plan to include all site-specific provisions for emergency response and submit it to BJC for review and approval.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 14B-1. Don Igou
Corrective Action 14B-2. Jim King
Corrective Action 14B-3. Don Igou

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 14B-1. June 1, 2000
Corrective Action 14B-2. June 1, 2000
Corrective Action 14B-3. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 14B-1. July 31, 2000
Corrective Action 14B-2. October 30, 2000
Corrective Action 14B-3. July 31, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 14B-1. Copy of signed document and transmittal to subcontractor
Corrective Action 14B-2. Copy of revised Management Assessment Schedule and issued assessment report that focuses on Exhibit G compliance
Corrective Action 14B-3. Completed submittal status sheet documenting review and notification "work may proceed"

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14C.

Ergonomic programs have not fully matured and formalized ergonomics training is not provided to workers, supervisors, or safety professionals.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Ergonomic programs at PORTS have not fully matured. Page 42
- Supervisors are not provided instruction on identifying . . . Page 42
- . . . recommendations from this assessment (e.g., two-person . . . Page 42

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14C.

Ergonomic programs have not fully matured and formalized ergonomics training is not provided to workers, supervisors, or safety professionals. Ergonomics are not incorporated into any formal training program for workers, supervisors, or safety and health professionals. Supervisors are not provided instruction on identifying ergonomic hazards or using ergonomic equipment.

ROOT CAUSE:
5A Training Problem-No Training Provided.
The requirements for a formalized ergonomics program are not in effect per 29 CFR 1910 as of this date. It was recognized that training was needed for workers, supervisors, and safety professionals in BJC ergonomics procedures

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 14C-1. The Industrial Hygienist for PORTS attended professional ergonomics training.

Corrective Action 14C-2. Develop a training module that incorporates all provisions of the BJC ergonomics procedures.

Corrective Action 14C-3. Conduct training for workers, supervisors, and safety professionals in the module prepared in Corrective Action 14C-2.

[redacted]

Corrective Action 14C-1. Rick Dearholt
Corrective Action 14C-2. Roger Thompson
Corrective Action 14C-3. Glenn Brego

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 14C-1. March 1, 2000
Corrective Action 14C-2. June 1, 2000
Corrective Action 14C-3. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 14C-1. Complete March 30, 2000
Corrective Action 14C-2. July 30, 2000
Corrective Action 14C-3. August 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 14C-1. Copy of completed training attendance sheet and/or certificate
Corrective Action 14C-2. Copy of issued module on ergonomics training
Corrective Action 14C-3. Copy of completed training attendance logs

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

None

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14D.

BJC facility emergency packets are deficient, outdated, and not in compliance with Occupational Safety and Health Administration (OSHA) programs.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report*:

- BJC facility emergency packets are deficient, outdated, . . Page 42
- There are no facility emergency packets for the lithium storage . . . Page 42

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14D.

BJC facility emergency packets are deficient, outdated, and not in compliance with OSHA programs. Several deficiencies were observed in Bechtel Jacobs building emergency packets and pre-fire plan information, such as lack of required nuclear criticality safety and other reviews, inadequate chemical inventory and MSDS information, lack of specific building layout information, and outdated emergency contact lists.

ROOT CAUSE:
2A Procedure Problem – Defective or Inadequate Procedure.
It was identified that some emergency packets did not contain information, nor had errors, that were essential to the performance of this activity as required by procedure.

ISMS EVALUATION:
F4 Perform Work Within Controls
P4 Balanced Priorities

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 14D-1. Complete review and update of all facility emergency packets in accordance with OSHA emergency response programs requirements as provided in 29CFR 1910.38 and 29CFR 1920.120.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 14D-1. Marsha Bevins

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 14D-1. July 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 14D-1. November 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 14D-1. Copy of completed submittal status sheet or log showing review and acceptance of facility emergency packets

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

None

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #15 (PORTS-INV-00-15). Bechtel Jacobs and its subcontractors do not effectively implement some occupational health requirements.

AREA OF CONCERN 15A.

The requirements of DOE Order 440.1A, Worker Protection Management, Chapter 19, "Occupational Medicine" or equivalent requirements have not been integrated into the DOE/BJC WSS process.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Several key requirements of this order . . . Page 42
- These requirements of this order . . . Page 43

ISSUE #15 (PORTS-INV-00-15). Bechtel Jacobs and its subcontractors do not effectively implement some occupational health requirements.

AREA OF CONCERN 15A.

The requirements of DOE Order 440.1A, Worker Protection Management, Chapter 19, "Occupational Medicine" or equivalent requirements have not been integrated into the DOE/BJC WSS process. Elements not established include methods for identifying and communicating workplace hazards to medical professionals, comprehensive medical surveillance programs, performance of targeted examinations, and a method for communicating examination results to management responsible for mitigating those hazards.

ROOT CAUSE:

6A Inadequate Administrative Control.

BJC notes that there are several unique aspects of its M&I contract with the DOE. The M&I contract does not provide that BJC comply with all DOE directives. Specific ES&H requirements are tailored for the contract scope, maintained, and flowed down to subcontractors, as applicable. These ES&H requirements are contained in specific sets of WSS and Standard/Requirement Identification Documents as identified in the contract Baseline List of Required Compliance Documents. A guiding principle for the WSS process is that the approved set of standards shall be accepted by all Department Elements as the basis for the performance of work and of oversight [(Reference DOE M450.3-1, Section 2.c (5)]. BJC will incorporate equivalent requirements to DOE Orders not specifically addressed in the WSS.

ISMS EVALUATION:

P2 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 15A-1. DOE Order 440.1A, Chapter 19, Occupational Medicine, has been included in the BJC WSS.

Corrective Action 15A-2. BJC will prepare an interface protocol and will hold a quarterly interface meeting between the SOMC medical director, BJC industrial hygiene, safety, and health physics personnel to discuss ongoing and planned work activities and to identify the chemical, biological, radiological and physical hazards associated with the work.

Corrective Action 15A-3. BJC will audit the subcontractor medical certification. This audit will be conducted annually by the end of each June company wide for selected subcontractors.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 15A-1. Danny Whitaker-Sheppard
Corrective Action 15A-2. Glenn Brego
Corrective Action 15A-3. Roger Thompson

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 15A-1. January 1, 2000
Corrective Action 15A-2. May 1, 2000
Corrective Action 15A-3. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 15A-1. Complete April 27, 2000
Corrective Action 15A-2. August 30, 2000
Corrective Action 15A-3. July 31, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 15A-1. Copy of completed letter to DOE showing formal inclusion of Chapter 19, Occupational Medicine into the applicable WSS
Corrective Action 15A-2. Copy of meeting minutes
Corrective Action 15A-3. Copy of audit report

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #15 (PORTS-INV-00-15). Bechtel Jacobs and its subcontractors do not effectively implement some occupational health requirements.

AREA OF CONCERN 15B.

Clearly defined roles and responsibilities for BJC and WASTREN Line Management, ES&H personnel, and Emergency Management to provide information to the medical provider concerning hazards and health effects that could impact workers have not been established in site specific documents.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- These requirements of this order . . . Page 43
- USEC employees who perform work . . . Page 43

ISSUE #15 (PORTS-INV-00-15). Bechtel Jacobs and its subcontractors do not effectively implement some occupational health requirements.

AREA OF CONCERN 15B.

Clearly defined roles and responsibilities for BJC and WASTREN Line Management, ES&H personnel, and Emergency Management to provide information to the medical provider concerning hazards and health effects that could impact workers have not been established in site specific documents. These requirements are necessary to ensure compliance with DOE Order 440.1A, and should be clearly communicated through plant safety and health policies and procedures.

ROOT CAUSE:

6B Management Problem-Planning Deficiency.

Clearly defined roles and responsibilities for BJC and WASTREN Line Management, ES&H personnel, and Emergency Management to provide information to the medical provider concerning hazards and health effects that could impact workers have not been established in site specific documents.

ISMS EVALUATION:

F3 Develop and Implement Hazard Controls

P2 Clear Roles and Responsibilities

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 15B-1. BJC will prepare an interface protocol, in accordance with DOE Order 440.1 A, and will hold a quarterly interface meeting between the SOMC medical director, BJC industrial hygiene, safety, and health physics personnel to discuss ongoing and planned work activities and to identify the chemical, biological, radiological and physical hazards associated with the work.

Corrective Action 15B-2. BJC will audit the subcontractor medical certification. This audit will be conducted annually by the end of each June company wide for selected subcontractors.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 15B-1. Glenn Brego

Corrective Action 15B-2. Roger Thompson

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 15B-1. May 1, 2000

Corrective Action 15B-2. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 15B-1. August 30, 2000

Corrective Action 15B-2. July 31, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 15B-1. Copy of meeting minutes

Corrective Action 15B-2. Copy of audit report

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 15B-2. PAD CAP 11A-1
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #16 (PORTS-INV-00-16). OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

Issue 16 is an overarching management oversight issue dealing with requirements management; operational awareness, performance monitoring and appraisal; training, qualifications and staffing; and the Integrated Safety Management System. As such, it has linkages with many of the issues noted in the DOE Office of Oversight Report. The corrective actions for most of the areas of concern associated with the other issues noted in the report are linked to the corrective actions for issue 16 areas of concern as documented in Table 6.

AREA OF CONCERN 16A.

ES&H performance has not been acceptable in several areas in which the applicability of key DOE directives, equivalent industry standards, or appropriate regulations has not been made clear. A number of applicable DOE directives have not been included in the work smart standards for Bechtel Jacobs, but have been classified as guidance for flowdown to subcontractors. Most of the directives establish DOE requirements and expectations for contractor management and administrative systems. Because some of these directives were not fully addressed through other equivalent standards, requirements were sometimes either omitted or not clearly captured in ES&H programs and procedures.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Elimination of various environmental media from... Page 14
- Many of the requirements of 5400.1&5 are not... Page 17
- 5480.19 not included in work smart standards. Page 31
- DOE Line Management responsibility for safety. Page 45
- Inadequate requirements management. Page 46

ISSUE #16 (PORTS-INV-00-16). OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

AREA OF CONCERN 16A

Inadequate Requirements Management - ES&H performance has not been acceptable in several areas in which the applicability of key DOE directives, equivalent industry standards, or appropriate regulations has not been made clear. A number of applicable DOE directives have not been included in the work smart standards for Bechtel Jacobs, but have been classified as guidance for flowdown to subcontractors. Most of the directives establish DOE requirements and expectations for contractor management and administrative systems. Because some of these directives were not fully addressed through other equivalent standards, requirements were sometimes either omitted or not clearly captured in ES&H programs and procedures. These directives include DOE Orders 5480.23 which requires SAR updates, DOE Order 440.1A Work Protection Management, DOE Order 425.1 and DOE STD 3006-95 which address readiness reviews for start and restart of nuclear facilities, DOE Order 5480.19 Conduct of Operations Requirements for DOE Facilities, DOE Order 5400.1 General Environmental Protection, and DOE Order 5400.5 Radiation Protection of the Public and the Environment.

ROOT CAUSE:

The root cause is Management Problem (6E) Policy Not Adequately Defined, Disseminated, or Enforced and Inadequate Supervision (6C). These failed to correct Personnel Error (3A).

6E Policy Not Adequately Defined, Disseminated or Enforced/ 6C Inadequate Supervision /3A Personnel Error

Oak Ridge has not conducted effective oversight of ES&H nor ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements. The Work Smart Standards (WSS) process produced work standards that did not include essential DOE Directive environment, safety and health requirements. Utilizing a necessary and sufficient approach for developing standards, it was not necessary to cite applicable DOE Directives as requirements, but it was necessary to ensure that the directives were fully addressed through other equivalent standards. The root cause is that the policy was not adequately defined, communicated, or enforced to ensure that the WSS contained standards that were equivalent to applicable DOE and regulatory requirements. The identification team that developed standards and management/supervisory team that reviewed standards, though properly trained, did not adequately apply that knowledge to the standards development task.

DESCRIPTION OF CORRECTIVE ACTION:

Background: In the mid 1990s, the Department made a decision to make a fundamental change in the conduct of business by implementing a necessary and sufficient approach to ES&H requirements. This has evolved to the Work Smart Standard (WSS) process. DOE P 450.3 and derivative documents provided the framework on which ORO formed an identification (ID) team to determine work scope, hazards, and standards to mitigate those hazards. In consideration of applicable standards, an effort was made to avoid redundancy. If an applicable regulation covered the essential elements of an order, the order was not incorporated into the contract WSS set. The ID team's effort was further reviewed by a confirmation team of supervisory/management personnel. Additionally, the Request for Proposals (RFP), subsequently awarded to Bechtel Jacobs, contained the WSS set and was reviewed and concurred on by HQ elements including EM, NE, GC, EH and MA prior to award.

Corrective Action 16A-1. Use the change control process of ORO Order 250, Chapter V to include where appropriate the addition of a select number of National Standards, Regulations, and DOE Orders to the WSS. This process is effective as evidenced by the number of revisions already made to the WSS set. To correct this issue and have enforceable requirements, the BJC contract may need to be reviewed to determine if a contract modification is required. Once the appropriate additions to the WSS have been determined to ensure that there are adequate ES&H standards in place to protect the workers, the public and the environment, a change process to the BJC contract will be initiated, if necessary. Negotiations with BJC will proceed to arrive at the cost of changing the contract following budget adjustments.

DOE-ORO RESPONSIBLE PERSON:

Corrective Action 16A-1. Jeff Burgan, CO

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 16A-1. September 30, 2000

EXPECTED COMPLETION DATE:

Corrective Action 16A-1. June 2001

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 16A-1. Signed contract modification, if necessary

DOE SUPPORT ACTION REQUIRED? (specify)

N/A

LINK TO OTHER CORRECTIVE ACTION? (specify)

See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 through 15 and 17

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

Issue #16 (PORTS-ENV-00-16): OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

Issue 16 is an overarching management oversight issue dealing with requirements management; operational awareness, performance monitoring and appraisal; training, qualifications and staffing; and the Integrated Safety Management System. As such, it has linkages with many of the issues noted in the DOE Office of Oversight Report. The corrective actions for most of the areas of concern associated with the other issues noted in the report are linked to the corrective actions for issue 16 areas of concern as documented in Table 6.

AREA OF CONCERN 16B.

Insufficient Operational Awareness, Performance Monitoring, and Appraisal - There is a lack of oversight and direction by the headquarters program offices and OR, as well as a general lack in the execution of the oversight function in the Portsmouth Site Office. Since 1997 there have been no formal safety or health appraisals by ORO or by DOE Headquarters, excluding an ES&H and Quality Assurance "assist visit" in November 1999, which was driven by the issues identified by the Oversight investigation at Paducah last fall and the ISMS verification in January 2000. Further, there was no evidence that the Portsmouth Site Office had requested safety and appraisal assistance from OR in recent years. OR's direction to the Portsmouth Site Office regarding contractor oversight under the management and integrating contract; outlined in a January 1998 letter, was that oversight emphasis would be on "establishing policies, standards, baselines, and objectives and measuring performance rather than focusing on day-to-day oversight and control." However, this reduced emphasis on day-to-day oversight was not accompanied by increased emphasis on ES&H performance objectives or monitoring.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

ISSUE #16 (PORTS-INV-00-16). OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

AREA OF CONCERN 16B

Insufficient Operational Awareness, Performance Monitoring, and Appraisal - There is a lack of oversight and direction by the headquarters program offices and OR, as well as a general lack in the execution of the oversight function in the Portsmouth Site Office. Since 1997 there have been no formal safety or health appraisals by ORO or by DOE Headquarters, excluding an ES&H and Quality Assurance "assist visit" in November 1999, which was driven by the issues identified by the Oversight investigation at Paducah last fall and the ISMS verification in January 2000. Further, there was no evidence that the Portsmouth Site Office had requested safety and appraisal assistance from OR in recent years. OR's direction to the Portsmouth Site Office regarding contractor oversight under the management and integrating contract; outlined in a January 1998 letter, was that oversight emphasis would be on "establishing policies, standards, baselines, and objectives and measuring performance rather than focusing on day-to-day oversight and control." However, this reduced emphasis on day-to-day oversight was not accompanied by increased emphasis on ES&H performance objectives or monitoring. The DOE system for identifying management responsibilities for buildings and equipment is not comprehensive and has not resulted in accurate lease and inventory lists and assigned and accountabilities that are clearly communicated to USEC and the DOE Portsmouth Site Office.

ROOT CAUSE:
The root causes are Management Problem (6A) and Inadequate Administrative Control and Training Deficiency (5A&5B).

6A Inadequate Administrative Control/5A Training Deficiency-No training provided/5B Training Deficiency- Insufficient practice or hands on experience.

Oak Ridge has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements. There has been a lack of oversight and direction by the Headquarters program office and Oak Ridge, as well as a general lack in the execution of the oversight function in the Portsmouth Site Office. Finally, management direction to reduce emphasis on day-to-day oversight and control under the M&I contract was not accompanied by increased emphasis on ES&H performance objectives or monitoring. The root cause is that the policy was not adequately defined, disseminated, or enforced for conducting effective oversight of ES&H under an M&I contract .The management team that developed the reduced oversight and control approach did not have adequate knowledge and experience to recognize that performance measures and monitoring were required to compensate for reduced control.

DESCRIPTION OF CORRECTIVE ACTION:
Background: Direction was provided to the Portsmouth DOE Site Office from ORO concerning the effective environment, safety and health oversight by federal staff for Bechtel Jacobs and their subcontractor in December 1999. DOE-ORO established a three-tiered approach to oversight of Bechtel Jacobs and its subcontractors at the Portsmouth Site. Level one oversight occurs at the site level and is led by the Site Manager. Level two is provided by DOE-ORO Nuclear Energy (NE) and Environment Management (EM) line organization personnel. Level three will be provided by the DOE-ORO ES&H organization.

Corrective Action 16B-1. Review procedure PORTS-SA-501, and revise as necessary to require that the appropriate ES&H activities are included in the facility walkthroughs and that the walkthroughs are appropriately documented. Provide training to Site Office staff on the new procedure. The Portsmouth Site Office personnel provide oversight with support from DOE-ORO

ES&H staff as needed. The oversight process at Portsmouth is formalized in a DOE Site Office Procedure PORTS-SA-501 entitled "Facility Walkthrough Program." This procedure provides facility assignments for Site Office personnel and a form for documenting the oversight. This procedure will be reviewed and updated, as required, to assure that appropriate ES&H activities are included in the walkthroughs. A computer database has been established that tracks all Site Office walkthroughs. A system has been established to ensure that all facilities have walkthroughs conducted at least once per year. As part of the Site Office Walk-Through Program, Bechtel Jacobs employee training records will be periodically reviewed. Site Office oversight findings are conveyed to Bechtel Jacobs on a real-time basis and documented in a Monthly Oversight and Inspection Report to Bechtel Jacobs company delineating the findings, requiring corrective actions, follow up, feedback, and trending as necessary.

Corrective Action 16B-2. Implement line management oversight in accordance with DOE-ORO O 450 and EM-4.2, *Facility Walkthroughs*. This oversight includes facility walkthroughs by ORO line personnel and will include a review and management analysis of Monthly Oversight and Inspection Reports prepared by Site Office personnel. DOE-ORO and HQ's safety and health walkthroughs will be included as appropriate. DOE-ORO line management will perform an annual self-assessment of selected federal activities, including ES&H, in accordance with DOE-ORO O 450. The first assessment is planned for April 2001 at Portsmouth.

Corrective Action 16B-3. Implement independent ES&H oversight activities in accordance with DOE-ORO O 450. This oversight will be independent of DOE line management and performed on an annual basis in accordance with DOE-ORO O 450. The first assessment is planned for September 2000 that includes, but is not limited to, ISMS re-verification.

Corrective Action 16B-4. DOE HQ will conduct a quarterly Integrated Program Performance Review at the Portsmouth Site. The reviews will be conducted at the site and focus on baseline performance of mission and budget requirements, Corrective Action Plan progress reviews, activities prioritization, and emerging issues affecting Site operations and project performance. Two of the reviews will be considered as integrated mid-year and year-end schedule program reviews. The review will include participation by EM and NE representatives from HQ, ORO, and the Portsmouth Site Office. DOE HQ will establish the scope and priorities of each review after consultation with all participants. All participants will agree upon a list of action items and assignments resulting from the review. The first quarterly Program Performance Review is scheduled for October 2000, with subsequent reviews in January, April, and July. Both HQ, NE and EM organizations have increased staffing and have established an office to provide adequate support for this effort.

Corrective Action 16B-5. Train DOE contracting and program/project management staff regarding appropriate performance measures and monitoring required to properly administer a Management & Integration Contract. This will be accomplished through a workshop/seminar.

Corrective Action 16B-6. The PORTS Site Office, Oak Ridge Office and HQ will work together to develop a listing of the types of documents to be routed and the personnel to whom they will be routed. To support teamwork and collaborative oversight, PORTS will route copies of key documents, such as weekly reports, correspondence with the regulators, etc., to appropriate ORO and HQ staff and

Background: Direction was provided to the Portsmouth DOE Site Office from ORO concerning the effective environment, safety and health oversight by federal staff for Bechtel Jacobs and their subcontractor in December 1999. DOE-ORO established a three-tiered approach to oversight of Bechtel Jacobs and its subcontractors at the Portsmouth Site. Level one oversight occurs at the site level and is led by the Site Manager. Level two is provided by DOE-ORO Nuclear Energy (NE) and Environment Management (EM) line organization personnel. Level three will be provided by the DOE-ORO ES&H organization.

Corrective Action 16B-1. Review procedure PORTS-SA-501, and revise as necessary to require that the appropriate ES&H activities are included in the facility walkthroughs and that the walkthroughs are appropriately documented. Provide training to Site Office staff on the new procedure. The Portsmouth Site Office personnel provide oversight with support from DOE-ORO

Corrective Action 16B-7. DOE will review the lease and inventory lists and any discrepancies will be resolved. Several discrepancies in the official list have been identified, and dissemination of the information in the list is not always effective. As a result, some DOE buildings and equipment shown as being leased to USEC are being inspected and managed by DOE/BJC, some buildings and equipment shown as retained by DOE are being used by USEC and either DOE or USEC is not managing some abandoned equipment. Two fluorine generator cells were shown to be leased to USEC but remain in DOE-retained space. Also, the USEC leased equipment list includes several items from X-344C, a DOE retained facility.

Corrective Action 16B-8. NCS reviews of DOE retained equipment in USEC leased facilities will be reviewed and/or performed. Deficiencies in DOE leasing lists and unclear responsibilities and accountability resulted in a lack of criticality safety reviews for some equipment.

DOE-ORO RESPONSIBLE PERSON:

Corrective Action 16B-1. Portsmouth DOE Site Office Manager
Corrective Action 16B-2. George Benedict and Rod Nelson
Corrective Action 16B-3. Robert Poe
Corrective Action 16B-4. Autar Rampertaap and Howard Huie
Corrective Action 16B-5. George Benedict, Rod Nelson, and Autar Rampertaap
Corrective Action 16B-6. PORTS DOE Site Office Manager
Corrective Action 16B-7. Anthony Takacs
Corrective Action 16B-8. Anthony Takacs

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 16B-1. June 9, 2000
Corrective Action 16B-2. September 1, 2000
Corrective Action 16B-3. August 1, 2000
Corrective Action 16B-4. October 2, 2000
Corrective Action 16B-5. January 1, 2001
Corrective Action 16B-6. August 1, 2000
Corrective Action 16B-7. August 1, 2000
Corrective Action 16B-8. August 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 16B-1. June 9, 2000
Corrective Action 16B-2. April 2, 2001
Corrective Action 16B-3. September 1, 2000
Corrective Action 16B-4. September 28, 2001
Corrective Action 16B-5. January 1, 2001
Corrective Action 16B-6. September 28, 2001
Corrective Action 16B-7. March 31, 2001
Corrective Action 16B-8. December 31, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 16B-1. Copy of revised PORTS-SA-501 and training rosters
Corrective Action 16B-2. Copies of assessment reports
Corrective Action 16B-3. Copy of assessment report
Corrective Action 16B-4. Copy of Quarterly Program reviews and follow-up actions and assignments
Corrective Action 16B-5. Copy of training material and attendance rosters
Corrective Action 16B-6. Copy of document list
Corrective Action 16B-7. Revised Leases List
Corrective Action 16B-8. Revised NCSA

DOE SUPPORT ACTION REQUIRED? (specify)

N/A

LINK TO OTHER CORRECTIVE ACTION? (specify)

CA 16C-1 through 5
See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 through 15 and 17

CORRECTIVE ACTION TRACKING SYSTEM:

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* Considered as mid-year and year-end integrated PORTS program review

ISSUE #16 (PORTS-INV-00-16). OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

Issue 16 is an overarching management oversight issue dealing with requirement management; operational awareness, performance monitoring and appraisal; training, qualifications and staffing; and the Integrated Safety Management System. As such, it has linkages with many of the issues noted in the DOE Office of Oversight Report. The corrective actions for most of the areas of concern associated with the other issues noted in the report are linked to the corrective actions for issue 16 areas of concern as documented in Table 6.

AREA OF CONCERN 16C.

Training, Qualifications, and Staffing – The DOE Portsmouth Site Office has not implemented a formal program to ensure that personnel assigned to oversee contractor performance maintain adequate proficiency in areas related to safety and health. A training requirements matrix is not rigorously maintained. DOE personnel do not aggressively pursue more in-depth instruction in safety to complement their training in these basic compliance areas. Cross training in other disciplines to improve the effectiveness and efficiency of the Portsmouth Site Office staff in performing its oversight function is not vigorously encouraged. Neither OR nor the Portsmouth Site Office ensures that Bechtel Jacobs and the subcontractor are meeting the intent of the requirements contained in American National Standards Institute (ANSI) Standard 8.20, Nuclear Criticality Safety Training. The site lacks sufficient professional expertise in some key areas to effectively execute necessary duties. DOE Portsmouth Site Office personnel did not participate in the PORTS Bechtel Jacobs bioassay program.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Insufficient environmental staff. Page 19
- DOE did not participate in the urinalysis program. Page 36
- Competence commensurate with responsibilities. Page 46
- Insufficient review of occurrence reports. Page 48
- Training deficiencies. Page 48

ISSUE #16 (PORTS-INV-00-16). OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

AREA OF CONCERN 16C

Training, Qualifications, and Staffing – The DOE Portsmouth Site Office has not implemented a formal program to ensure that personnel assigned to oversee contractor performance maintain adequate proficiency in areas related to safety and health. A training requirement matrix is not rigorously maintained. DOE personnel do not aggressively pursue more in depth instruction in safety to complement their training in these basic compliance areas. Cross training in other disciplines to improve the effectiveness and efficiency of the Portsmouth Site Office staff in performing its oversight function is not vigorously encouraged. Neither OR nor the Portsmouth Site Office ensures that Bechtel Jacobs and the subcontractor are meeting the intent of the requirements contained in American National Standards Institute (ANSI) Standard 8.20, Nuclear Criticality Safety Training. The site lacks sufficient professional expertise in some key areas to effectively execute necessary duties. DOE Portsmouth Site Office personnel did not participate in the PORTS Bechtel Jacobs bioassay program.

ROOT CAUSE:

The root causes are Management Problems (6D) Improper Resource Allocation; (6E) Policy Not Adequately Defined/Disseminated/Enforced and training deficiency (5A) No Training Provided and (5B) Insufficient Practice or Hands on Training. These are described below.

This is a multi-faceted area of concern, and each facet has a different root cause. Training and proficiency concerns related to DOE PORTS staff results from a small staff trying to accomplish many activities. Training, cross training and safety & health proficiency was not prioritized by management as highly as other activities and therefore was not accomplished by an overburdened staff. Inadequate expertise to perform job functions is also representative of understaffing. The root cause here is *6D, Management Problem – Improper Resource Allocation.* Failure of ORO or the PORTS Site Office to ensure BJC and subcontractors meet criticality training safety requirement parallels the findings in area of concern 16B. The root cause here is the same as 16B, namely, the management team that developed the reduced oversight and control approach for the M&I contract did not have adequate knowledge and experience to recognize that performance measures and monitoring were required to compensate for reduced control. *5A, Training Deficiency - no training provided, and/or 5B, Training Deficiency - insufficient practice or hands on experience.* Finally, the root cause for DOE PORTS staff not participating in the BJC bioassay program is *6E, Management Problem – Policy Not Adequately Defined/Disseminated/Enforced.*

DESCRIPTION OF CORRECTIVE ACTION:

Background: The Site Office technical staff (eight out of ten staff members) are required to participate in the Technical Qualification Program. Therefore, there is a broad level of expertise in many technical areas, such as environmental compliance, waste management, industrial hygiene, security, construction safety, emergency management, facility representative, etc. In addition, each staff member has an Individual Development Plan (IDP) which identifies specific training and development needs.

Corrective Action 16C-1. Review Site Office staff position descriptions to identify and document staff members with contractor performance oversight responsibilities. The appropriate staff IDPs will then be modified to reflect the safety and health recommended training. Discussions will be held with the ORO Office of Environment, Safety, and Quality to request assistance and recommendations for core safety and health training courses for Site Office staff. This action will be completed by August 1, 2000.

Corrective Action 16C-2. Develop and maintain a training matrix to reflect the ES&H training requirements and the revised IDPs. This action will be completed by October 31, 2000.

Corrective Action 16C-3. Develop a schedule where on a monthly basis, individual staff personal that are already trained in a specific area will conduct basic training in their area of expertise. For example, the construction safety staff will provide training in basic confined space entry to hoisting and rigging, etc. Training began on August 1, 2000.

Corrective Action 16C-4. DOE/ORO Management has approved a permanent full-time Facility Representative position for the Portsmouth Site Office. DOE/ORO Management is planning a full-time Health Physics position for the Portsmouth Site Office.

Corrective Action 16C-5. In accordance with 10CFR835 and as specified in the Bechtel Jacobs procedure for site personnel issued dosimeters, as of November 1999, all DOE Portsmouth Site Office staff, who have been issued a dosimeter are participating in the PORTS Bechtel Jacobs bioassay program.

DOE-ORO RESPONSIBLE PERSON:

Corrective Action 16C-1. PORTS Site Office Manager
Corrective Action 16C-2. PORTS Site Office Manager
Corrective Action 16C-3. PORTS Site Office Manager
Corrective Action 16C-4. Rod Nelson
Corrective Action 16C-5. PORTS Site Office Manager

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 16C-1. August 1, 2000
Corrective Action 16C-2. January 3, 2000
Corrective Action 16C-3. November 1, 2000
Corrective Action 16C-4. June 1, 2000
Corrective Action 16C-5. November 30, 1999

EXPECTED COMPLETION DATE:

Corrective Action 16C-1. December 29, 2000
Corrective Action 16C-2. October 31, 2000
Corrective Action 16C-3. January 1, 2001
Corrective Action 16C-4. December 29, 2000
Corrective Action 16C-5. November 30, 1999

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 16C-1. Revised Individual Development Plans - Approved by Site Manager and ORO
Corrective Action 16C-2. Management Training Matrix Developed - Approved by Site Manager
Corrective Action 16C-3. Copy of schedule
Corrective Action 16C-4. Copy of organization chart
Corrective Action 16C-5. Memo from BJC Bioassay personnel confirming participation

DOE SUPPORT ACTION REQUIRED? (specify)

N/A

LINK TO OTHER CORRECTIVE ACTION? (specify)

See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 through 15 and 17

CORRECTIVE ACTION TRACKING SYSTEM:

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ISSUE #16 (PORTS-INV-00-16). OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

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AREA OF CONCERN 16D.

Concerns With The Integrated Safety Management System - The lack of a formal readiness assessment and subsequent identification of deficiencies in procedures and conduct of operations call into question the validity of the OR ISMS verification results. The recent ISMS verification by OR did not identify many of the existing compliance issues for PORTS that were identified by the investigation team. The OR combined Phase I and II verification of the ISMS for Bechtel Jacobs illustrates the investigation team's concern about the lack of rigor in DOE line oversight. The findings of this investigation team are not consistent with the conclusions of the verification team that the ISMS verification objectives and criteria were met as they apply to PORTS. Specifically, the investigation team concluded that, in many cases, Phase I ISMS program implementing documents were not yet adequate and that implementation deficiencies precluded a determination that related Phase II criteria and objectives were met.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Question on validity of OR ISMS assessment. Page 34
- OR phase I and II ISMS verification shows lack of rigor . . . Page 47

ISSUE #16 (PORTS-INV-00-16). OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

AREA OF CONCERN 16D

Concerns With The Integrated Safety Management System - The lack of a formal readiness assessment and subsequent identification of deficiencies in procedures and conduct of operations call into question the validity of the OR ISMS verification results. The recent ISMS verification by OR did not identify many of the existing compliance issues for PORTS that were identified by the investigation team. The OR combined Phase I and II verification of the ISMS for Bechtel Jacobs illustrates the investigation team's concern about the lack of rigor in DOE line oversight. The findings of this investigation team are not consistent with the conclusions of the verification team that the ISMS verification objectives and criteria were met as they apply to PORTS. Specifically, the investigation team concluded that, in many cases, Phase I ISMS program implementing documents were not yet adequate and that implementation deficiencies precluded a determination that related Phase II criteria and objectives were met.

ROOT CAUSE:
The root cause is Other Management Problem (6F)

The fact that accepted DOE protocols were used in the OR verification of the ISMS at PORTS rules out most procedure deficiency. Because the objectives of the EH Team Investigation and discrepancies in interpretation of observations exist.

DESCRIPTION OF CORRECTIVE ACTION:
Corrective Action 16D-1: Verify that all Opportunities for Improvement from the February ISMS Review have been performed. An ISMS Verification of DOE and Bechtel Jacobs Company was performed by OR DOE in February 2000. The ISMS verification was conducted using accepted DOE protocols and sampled work performance across five (5) sites, including sites not reviewed and evaluated by EH. The ORO verification recommended approval of Phase I but identified weaknesses in Phase II implementation of ISMS core functions and guiding principles. Overall, the ORO ISMS verification identified fifty (50) total Opportunities for Improvement (OFI). The EH Team focused time and resources at PORTS and found some compliance problems not identified by the ORO ISM Team. Given the deficiencies identified by EH, ORO will perform additional reviews at PORTS. All OFIs will be loaded into the DOE Feedback and Improvement Tracking System, which will provide an additional method to track the actions to complete these important items. Actions to verify implementation of the OFIs are scheduled for completion in September 2000.

Corrective Action 16D-2. Conduct additional reviews at PORTS to confirm Phase II ISMS implementation and safe work performance. Adequate time for the reviews will be scheduled so that they can be conducted with sufficient rigor. The audit team will be staffed such that sufficient resources are applied to the task.

This review will focus on compliance problem identified in the EH Report.

DOE-ORO RESPONSIBLE PERSON:

Corrective Action 16D-1: Robert Poe
Corrective Action 16D-2: Robert Poe

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 16D-1. August 1, 2000
Corrective Action 16D-2. August 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 16D-1. September 29, 2000
Corrective Action 16D-2. September 29, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 16D-1. Completion reports for all identified Opportunities for Improvement
Corrective Action 16D-2. Phase II Implementation Review Report

DOE SUPPORT ACTION REQUIRED? (specify)

N/A

LINK TO OTHER CORRECTIVE ACTION? (specify)

CA 16B-3
See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 through 15 and 17

CORRECTIVE ACTION TRACKING SYSTEM:

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ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17A.

The BJC subcontractor formation teams and procurement process do not always incorporate current and consistent requirements into subcontracts and BJC Subcontractor Technical Representatives do not ensure that applicable subcontractor requirements are consistently delineated in subcontractor submissions.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- Exhibit E, Section 10200, "Subcontractor . . . Page 49
- However, it does not clearly identify . . . Page 49
- The investigation team identified . . . Page 49

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17A.

The BJC subcontractor formation teams and procurement process do not always incorporate current and consistent requirements into subcontracts and BJC Subcontractor Technical Representatives do not ensure that applicable subcontractor requirements are consistently delineated in subcontractor submissions. WASTREN's list of work smart standards includes superseded and outdated DOE directives, procedures, regulatory standards, and guides not appropriate for hazard category 2 nuclear facilities.

ROOT CAUSE:
The root cause is Management Problem (6A) Inadequate Administrative Control leading to (2A) Inadequate Procedures.

6A Inadequate Administrative Control/2A Inadequate procedures.

There was a lack of integration of all contractual documents required to direct accomplishment of tasks. The BJC Subcontractors Technical Representatives do not ensure applicable subcontractor requirements are consistently delineated in subcontractor submissions.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 17A-1. Complete company-wide Systems Integration Initiative to fully identity and properly flow down prime contract requirements in company documents and subcontract Proforma.

Corrective Action 17A-2. The Vice President and General Manager of BJC issued a Directive in January 2000 that all BJC Managers of Projects sign verification that the process has been followed for all subcontractor ES&H procedure packages under their respective purview. The verifications will commence on February 1, 2000.

Corrective Action 17A-3. Issued company-wide procedure, PQ-A-1450, *Subcontractor Oversight,* that defines the overall process, identifies roles and responsibilities of applicable BJC personnel, and outlines a graded approach, based on the hazards of the subcontractor activities. The procedure complements the BJC ISM Program, which focuses on identifying requirements up front. Completed subcontractor oversight plans.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 17A-1. John Lyons
Corrective Action 17A-2. Jim King
Corrective Action 17A-3. Danny Whitaker-Sheppard

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 17A-1. March 17, 2000
Corrective Action 17A-2. February 1, 2000
Corrective Action 17A-3. Issued March 30, 2000; effective June 30, 2000

EXPECTED COMPLETION DATE:

Corrective Action 17A-1. August 30, 2000
Corrective Action 17A-2. October 31, 2000
Corrective Action 17A-3. July 31, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 17A-1. Copy of Systems Integration Initiative, relevant meeting minutes and implementing documents that show appropriate prime contract requirements are promulgated throughout BJC and to subcontractors
Corrective Action 17A-2. Copies of signed verification packages
Corrective Action 17A-3. Copy of issued procedure PQ-A-1450, Subcontractor Oversight and completed subcontractor oversight plans

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 17A-2. PAD CAP 10C-1
Corrective Action 17A-3. PAD CAP 14A-1
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

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ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17B.

Weakness in the Readiness Assessment Process.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- No formal transition plan was developed . . . Page 49
- BJC authorized work to proceed . . . Page 49
- Process were not in place for maintaining . . . Page 49
- Additionally, no conduct of operations . . . Page 49
- Significant procedural deficiencies also existed . . . Page 49
- BJC did not assure . . . Page 49
- Program implementation deficiencies were . . . Page 49

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17B.

Weaknesses in the Readiness Assessment Process. Bechtel Jacobs oversight of ES&H programs has not identified important implementation weaknesses. BJC authorized the new plant services, maintenance and waste operations subcontractor to proceed with work in January 2000 without adequate assurance of readiness in ES&H. No formal transition plan was developed.

ROOT CAUSE:
The root cause is Management Problem (6A) Inadequate Administrative Control leading to (2A) Defective or Inadequate Procedure.

6A Inadequate Administrative Control/2A Procedure Problem – Defective or Inadequate Procedure.

The procedure on readiness assessments did not address ensuring major subcontractors are sufficiently prepared to assume associated responsibilities.

ISMS EVALUATION:
F3 Develop and Implement Hazard Controls
P1 Line Management Responsibility for Safety

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 17B-1. Review and revise PQ-A-1510, Readiness Reviews, to include readiness reviews of subcontract implementation.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 17B-1. Dan Longpre

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 17B-1. Issued April 19, 2000; effective June 30, 2000

EXPECTED COMPLETION DATE:

Corrective Action 17B-1. June 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 17B-1. Copy of revised procedure

DOE SUPPORT ACTION REQUIRED? (specify)

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17C.

There are many program and implementation weaknesses in BJC's operational awareness and appraisal programs.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17C.

There are many program and implementation weaknesses in BJC's operational awareness and appraisal programs. The Investigation Team observed several weaknesses in procedural processes, industrial safety, industrial hygiene, work planning, and work control. No central file is maintained for ES&H deficiencies. Bechtel Jacobs corporate Non-Conformance procedure does not require a significance review to establish whether a root cause analysis is required for a reported deficiency.

ROOT CAUSE:

6C Management Problem – Inadequate Supervision; 2A Ineffective or Inadequate Procedure.
Inadequate techniques were used to direct the subcontractor and oversee the daily accomplishment of tasks, which resulted in contractual deficiencies.

ISMS EVALUATION:

F3 Develop and Implement Hazard Controls
P3 Competence Commensurate with Responsibility
P6 Hazard Control Tailored to Work Being Performed

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 17C-1. Notify WASTREN, in writing, of contractual requirements that are deficient.

Corrective Action 17C-2. Implement the WASTREN Subcontractor Oversight Plan developed pursuant to BJC Procedure PQA-A-1450.

Corrective Action 17C-3. The subcontractor will modify their ES&H Plan to include all site-specific provisions for emergency response and submit to BJC for review.

Corrective Action 17 C-4. Review and revise, as necessary, BJC Non-Conformance procedure and include the requirement for a significance review to establish if a root cause analysis is required for a reported deficiency.

Corrective Action 17C-5. Demonstrate that the BJC I/CATS system is properly implemented at PORTS.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 17C-1. Don Igou
Corrective Action 17C-2. Jim King
Corrective Action 17C-3. Don Igou
Corrective Action 17C-4. Danny Whitaker-Sheppard
Corrective Action 17C-5.

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 17C-1. June 1, 2000
Corrective Action 17C-2. June 1, 2000
Corrective Action 17C-3. June 1, 2000
Corrective Action 17C-4. August 1, 2000
Corrective Action 17C-5. August 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 17C-1. July 31, 2000
Corrective Action 17C-2. October 30, 2000
Corrective Action 17C-3. July 31, 2000
Corrective Action 17C-4. November 30, 2000
Corrective Action 17C-5. November 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 17C-1. Copy of signed document and transmittal to subcontractor
Corrective Action 17C-2. Copy of revised Management Assessment Schedule and issued assessment report that focuses on Exhibit G compliance
Corrective Action 17C-3. Completed submittal status sheet documenting review and notification "work may proceed"
Corrective Action 17C-4. Copy of procedure of review documentation and/or revised procedure
Corrective Action 17C-5. Letter report to DOE Site Office including compiled ES&H issues entered into I/CATS for first quarter of FY 2001

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17D.

BJC has not established a system at PORTS to evaluate the ES&H and skills training received by principal subcontractors.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- .. ., currently subcontractors are only required . . . Page 51
- Certain USEC training modules . . . Page 51
- Although training records are being reviewed . . . Page 51
- . . ., personnel who are required to obtain . . . Page 51
- The subcontractor has not implemented . . . Page 51

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17D.

BJC has not established a system at PORTS to evaluate the ES&H and skills training received by principal subcontractors. BJC maintains a training requirement matrix for safety and health compliance training that is supplied by USEC. Certain modules are not site-specific, require self-study instead of classroom training, or do not require training for some BJC personnel. Consequently, not all personnel are trained for their assignments.

ROOT CAUSE:
6A Inadequate Administrative Control.
This is a condition that can be traced to a lack of a system to evaluate the ES&H and skill training received by subcontractors.

ISMS EVALUATION:
F1 Define the Scope of Work
P3 Competence Commensurate with Responsibility
P5 Identification of Safety Standards and Requirements

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 17D-1. Revise FY 2000 and subsequent Management Assessment Schedules to include an assessment focusing on the adequacy of subcontractor training for respective projects.

Corrective Action 17D-2. The BJC Training Manager will issue an annual report summary and trending results of training management assessments.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 17D-1. Jim King
Corrective Action 17D-2. Gloria Batiste

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 17D-1. June 1, 2000
Corrective Action 17D-2. June 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 17D-1. October 30, 2000
Corrective Action 17D-2. October 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 17D-1. Copy of Management Assessment Schedule and report.
Corrective Action 17D-2. Copy of annual report.

DOE SUPPORT ACTION REQUIRED? (specify)

Corrective Action 17D-1. Revised Management Assessment Schedule and issued assessment report that focuses on the adequacy of subcontractor training
Corrective Action 17D-2. Copy of Annual Report Summary issued to DOE

LINK TO OTHER CORRECTIVE ACTION? (specify)

Corrective Action 17D-1. PAD CAP 12B-1
Corrective Action 17D-2. PAD CAP 12B-2
Corrective Action 16 (See Table 7 - Linkage of PORTS Management Oversight Concern Issues 16 with Management Oversight Components in Issues 1 Through 15 and 17)

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17E.

The BJC's investigation and analysis of occurrence reports is inadequate.

This area of concern addresses the following statements, observations, or findings in the *DOE Office of Oversight Report:*

- The investigation team identified May 1999 . . . Page 50

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17E.

The BJC's investigation and analysis of occurrence reports is inadequate. The Investigation Team identified several 1999 event reports in which: events were not correctly identified or evaluated, corrective actions did not adequately address the causes, and consequently corrective actions were not fully effective in preventing reoccurrence.

ROOT CAUSE:
5D Training Problem-Insufficient Refresher Training.
The frequency of refresher training was not sufficient to maintain the required knowledge and skills.

ISMS EVALUATION:
F4 Perform Work Within Controls
P3 Competence Commensurate with Responsibility

DESCRIPTION OF CORRECTIVE ACTION:

Corrective Action 17E-1. Additional management attention with emphasis on investigation, analysis and completeness of all occurrence reports, and training to all personnel involved with the preparation of these reports.

BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:

Corrective Action 17E-1. Dan Longpre

CORRECTIVE ACTION INITIATION DATE:

Corrective Action 17E-1. February 1, 2000

EXPECTED COMPLETION DATE:

Corrective Action 17E-1. Complete July 30, 2000

CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:

Corrective Action 17E-1. Copies of meeting minutes and implementation documents (including Required Reading training attendance logs), as appropriate, showing occurrence reporting requirements have been communicated to appropriate personnel.

DOE SUPPORT ACTION REQUIRED? (specify)

None

LINK TO OTHER CORRECTIVE ACTION? (specify)

None

CORRECTIVE ACTION TRACKING SYSTEM:

Information on this sheet will be entered into the DOE Corrective Action Tracking System (CATS) and the BJC Issues Corrective Action Tracking System (I/CATS) and tracked to completion.

4.0 STATUS REPORTING

The corrective action data and information will be loaded into the DOE CATS and the BJC I/CATS for tracking and reporting. DOE-ORO and BJC personnel are coordinating to establish the framework and mechanics for loading the information.

BJC will provide a monthly summary status report to the PORTS Site Office, DOE-ORO, and DOE-HQ.

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Table 1. Issues Identified in the PORTS Volume 2 Investigation Report

Identifier	Issue Statement
PORTS-INV-00-01	The PORTS environmental restoration program, since the early 1990s, has not fully characterized radiological contaminants, integrated DOE radiological requirements into the cleanup program, and also developed risk estimates that underestimated radiological risk.
PORTS-INV-00-02	The migration of contaminants from the X-749 landfill to the south is not adequately monitored.
PORTS-INV-00-03	Legacy LLW and scrap/surplus material containers and storage areas are not consistently maintained and responsibility for managing some buildings with abandoned equipment is not clear.
PORTS-INV-00-04	The DOE radiological environmental surveillance program design, implementation, and reporting at PORTS do not currently meet the requirements of DOE Orders 5400.1 and 5400.5, nor established industry guidance. The technical basis that is inadequate for the current level and method of implementation.
PORTS-INV-00-05	Radiological exposure pathways for DOE operations have not been fully assessed or documented with an adequate technical basis.
PORTS-INV-00-06	Effective implementation of PORTS environmental programs has been limited by weaknesses in identification and communication of environmental requirements, insufficient numbers of professional environmental staff, and technical errors in analyses and reports.
PORTS-INV-00-07	The BJC ISMS supplement, which specifies elements and requirements on how to plan and execute work, is not effectively implemented at the working level.
PORTS-INV-00-08	Procedures are not always adequately developed, implemented, and controlled as specified in the Safety Analysis Report (SAR) and Technical Safety Requirements (TSRs).
PORTS-INV-00-09	BJC has not implemented an effective readiness assessment process, as stated in the ISMS supplement.
PORTS-INV-00-10	Incomplete radiological characterization of the workplace adversely affects the radiological control organization's ability to identify hazards and institute controls necessary to ensure consistent and appropriate radiological protection for workers.
PORTS-INV-00-11	There is a lack of rigor, formality, and discipline in the development, maintenance, and implementation of the BJC radiation protection program that impacts effective control of the hazards associated with radiological work.
PORTS-INV-00-12	The PORTS radiological air sampling program does not fully support the detection and evaluation of either the level or the concentration of airborne radioactive material at work locations.
PORTS-INV-00-13	Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.
PORTS-INV-00-14	Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

PORTS-INV-00-15	BJC and its subcontractors do not effectively implement some occupational health requirements.
PORTS-INV-00-16	Oak Ridge (OR) has not conducted effective oversight of ES&H or ensured that BJC and its subcontractors effectively implement all applicable DOE and regulatory requirements.
PORTS-INV-00-17	BJC oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

Table 2. Initial Compensatory Actions Taken by BJC and DOE-ORO

Action	Date Initiated/Completion
Radiological verification sampling of environmental media was conducted to assess areas where radiological releases may have been suspected but not identified and to confirm the extent of previous detections. The results of this sampling will also be used to baseline the radiological analytes for future soil, sediment, and groundwater samples.	September 1, 1999 / February 18, 2000
A technical evaluation has been completed, a contract is in place, and plans have been made to install three monitoring wells south of the barrier wall located at the southern site boundary to more effectively demonstrate that the barrier wall is containing contaminants onsite.	March 1, 2000 / May 31, 2000
A portion of the legacy LLW and scrap/surplus material has been inventoried and consolidated. As part of this effort, four DMSAs have been closed and the areas returned to USEC.	October 1, 1999 / TBD (awaiting decision from DOE-Headquarters on lease)
Routine Radiological Survey Plan & Program was increased in scope to include air sampling in cylinder lots and contaminated metal scrap yards.	February 1, 2000 / July 31, 2000
The program has been updated to include ambient air monitoring: the de-leasing of the systems from USEC has been initiated, upgrades to the system have been initiated, and a sampling program developed.	June 30, 2000 / September 30, 2000
Specific radionuclide activities, are related to the Derived Concentration Guidelines detailed in DOE Orders, have been developed for comparison to analytical results from the environmental monitoring program that will be the basis for further investigation or corrective actions. Descriptions of these levels will also be included in the revised version of the EMP.	April 3, 2000 / September 30, 2000
WASTREN is conducting a review of all work package documentation to enhance packages. Quality Assurance personnel are now routinely assessing work control activities.	March 21, 2000 / June 1, 2000
WASTREN has initiated a comprehensive process to control the issuance, dissemination, and maintenance of procedural documents. They have identified and scheduled approximately 50 external procedures for evaluation.	March 21, 2000 / April 19, 2000
Company-wide procedure PQ-A-1510 Revision 2, Readiness Reviews, was revised to specifically address these issues, identifying the ISMS 7 Guiding Principles as Minimum Core Requirements. This procedure was issued on April 25, 2000, with an effective date of June 30, 2000.	April 25, 2000 / June 30, 2000
Revised procedure PQ-A-1510, Readiness Evaluations, to require review and approval by PHP, and hired two Radiological Engineers to interface with projects, SEC RCTs, and initiate RWPs.	March 15, 2000 / June 30, 2000
Procedures for the calibration & operation of air sampling equipment and sample analysis have been approved and fully implemented as part of the Air Monitoring Program.	March 20, 2000 / June 13, 2000

Chemical inventories are being received monthly from all applicable subcontractors. During May 2000, a BJC assessment of the worker training and MSDS books will be performed on all applicable subcontractors.	May 1, 2000 / July 31, 2000
All JHAs have been reviewed by WASTREN safety and both safety and craft personnel have walked down health personnel and certain work. Personal air sampling is currently being conducted on individual work tasks.	March 21, 2000 / April 19, 2000
Access to the BJC computerized MSDS system has been given to SOMC. The SOMC medical provider contract is being changed to include the medical requirements for federal employees.	May 1, 2000 / August 30, 2000
Company-wide procedure PQ-A-1450, Subcontractor Oversight, was specifically developed to address these issues, and provide effective oversight of subcontractor work in compliance with subcontract requirements. This procedure was issued on 3/30/00, with an effective date of 6/30/00.	March 30, 2000 / June 30, 2000

The initial compensatory actions demonstrate, DOE-ORO and BJC are diligently responding to the issues identified by the DOE Oversight investigation team. All of the initial actions are incorporated into the specific corrective actions presented in this plan.

Table 3. Issues/Areas of Concern Summary

ISSUE #1 (PORTS-INV-00-01). The PORTS environmental restoration program, since the early 1990s, has not fully characterized radiological contaminants, did not integrate DOE radiological requirements into the cleanup program, and developed risk estimates that underestimated radiological risk.

AREA OF CONCERN 1A.

The lack of rigor for sampling, analysis and evaluation of radiological data may have led to inadequate risk assessments. This area of concern relates to the adequacy of the data used to support the selection and implementation of RCRA corrective actions and the quality of documents submitted for regulatory approval. The PORTS cleanup program did not adequately define the criteria to be used for obtaining and evaluating radiological data, gathered since the early 1990s or fully integrate the data into risk assessments. Risk assessments were conducted in support of cleanup program during the decision process for selecting alternative treatment strategies and technologies. The methods used to sample, analyze, and evaluate radiological data were not consistent with DOE guidance and industry standards, including the DOE Implementation Guide for Radiological Surveys, Multi-Agency Radiation Survey and Site Environmental Manual, NUREG-5849, and predecessors. These guides define acceptable methods for conducting surveys, selecting appropriate number of sampling locations, data quality objectives, and analytical specifications. The State of Ohio has questioned the validity of some of PORTS risk assessment approaches, including the exclusion of certain uranium daughter products in risk calculations.

AREA OF CONCERN 1B.

Lack of integration between RCRA Corrective Action Process and DOE's potential free release of areas to the public.

AREA OF CONCERN 1C.

Screening and evaluation of solid waste management units is incomplete. The EH Investigation noted, from interviews with past Plant workers, that several locations that processed or stored hazardous materials may have been unknown to Plant management.

ISSUE #2 (PORTS-INV-00-02). The migration of contaminants from the X-749 landfill to the south is not adequately monitored.

AREA OF CONCERN 2A.

Monitoring is not performed to confirm the effectiveness of the X-749 slurry wall in preventing the migration of groundwater contaminants beyond the slurry wall to the south.

ISSUE #3 (PORTS-INV-00-03). Legacy LLW and scrap/surplus material containers and storage areas are not consistently maintained, and responsibility for managing some buildings with abandoned equipment is not clear.

AREA OF CONCERN 3A.

Legacy LLW and scrap/surplus material containers are not stored and maintained in a manner consistent with best management practices, and there is no long-range plan for the disposition of scrap and D&D waste at PORTS.

AREA OF CONCERN 3B.

Good characterization data for containers near X-744G does not exist and wastes are not being managed ,pursuant to environmental regulations or the requirements of DOE Order 435.1.

AREA OF CONCERN 3C.

Responsibility for managing some buildings with abandoned equipment is not clear. (Note: Area of Concern 3C is included here for consideration).

ISSUE #4 (PORTS-INV-00-04). The DOE radiological environmental surveillance program design, implementation, and reporting at PORTS do not currently meet the requirements of DOE Orders 5400.1 and 5400.5 and established industry guidance, including a technical basis that is inadequate for the current level and method of implementation.

AREA OF CONCERN 4A.

A questionable technical basis exists for the Environmental Monitoring Program (EMP) and IGWMP, which stipulate requirements for the sampling, analysis, and evaluation of radiological data. DOE Order 5400.1 establishes requirements for environmental monitoring and surveillance programs and references requirements in DOE Order 5400.5 and Regulatory Guide DOE/EH-0173T. Several deficiencies in the radiological environmental surveillance program were noted by the EH Investigation Team: various environmental media were eliminated from the PORTS environmental sampling program, routine isotopic analysis of environmental samples was lacking guidance or procedures for determining action levels for total uranium results in media sampled were lacking, the Derived Concentration Guide (DCG) in reporting gross alpha activity, etcetera.

ISSUE #5 (PORTS-INV-00-05). Radiological exposure pathways for DOE operations have not been fully assessed or documented with an adequate technical basis.

AREA OF CONCERN 5A.

Fugitive emission assessment protocol that fully evaluates and documents radiological exposure pathways to ensure credibility and technical defensibility is lacking. The magnitude of fugitive emissions at PORTS is not known and this pathway has not been fully evaluated or documented as recommended by DOE Regulatory Guide DOE/EH-0173T. Fugitive emissions from several areas are possible, including the hot scrap yard, ponds, such as X-701B, and leaks from UF6 cylinder storage activities.

AREA OF CONCERN 5B.

Inadequate ambient air monitoring program.

ISSUE #6 (PORTS-INV-00-06). Effective implementation of PORTS environmental programs has been limited by weaknesses in identification and communication of environmental requirements, insufficient numbers of professional environmental staff, and technical errors in analyses and reports.

AREA OF CONCERN 6A.

Deficiencies exist in planning, staffing, and procedure development and implementation in support of environmental program requirements.

AREA OF CONCERN 6B.

Many of the applicable and appropriate requirements associated with DOE environmental protection orders, 5400.1 and 5400.5 were not incorporated into the approved work smart standards set for the BJC contract.

ISSUE #7 (PORTS-INV-00-07). The Bechtel Jacobs ISMS supplement, which specifies elements and requirements on how to plan and execute work, is not effectively implemented at the working level.

AREA OF CONCERN 7A.

Deficiencies in programs and implementation of ISMS elements, such as properly defining work, identifying hazards, and developing and adhering to controls, require additional DOE and BJC management attention.

AREA OF CONCERN 7B.

A formal and fully effective work control program encompassing both work practices and work control documentation has not been implemented by BJC or its field services subcontractor.

ISSUE #8 (PORTS-INV-00-08). Procedures are not always adequately developed, implemented, and controlled as specified in the SAR and TSRs.

AREA OF CONCERN 8A.

BJC's procedure PQ-A-1100, *Procedure Document Process*, describing the development, review, approval, and use of procedures does not adequately ensure quality procedure development implementation, and proper use. Consequently, emphasis on the rigorous conduct of operations, necessary for PORTS hazard category 2 nuclear facilities, is below the level of rigor assumed in the PORTS SAR.

AREA OF CONCERN 8B.

BJC allowed WASTREN to issue and use procedures without an approved document change control process in place, as required by 10 CFR 830.120 and the TSR, and without a USQ review process in place, as required by DOE Order 5480.21.

AREA OF CONCERN 8C.

WASTREN work control procedure lacks the necessary detail to ensure quality work control practices.

AREA OF CONCERN 8D.

Radiological control activities are not always conducted according to established technical standards, procedures, or administrative controls.

AREA OF CONCERN 8E.

A number of line management, health services, and training responsibilities have not been implemented in accordance with industrial hygiene procedures.

ISSUE #9 (PORTS-INV-00-09). Bechtel Jacobs has not implemented an effective readiness assessment process, as stated in the ISMS supplement.

AREA OF CONCERN 9A.

Lack of adherence to DOE and BJC/OR Readiness Assessment Policy and implementation of defective procedures allowed the Plant Services, Maintenance, and Waste Operations subcontractor to assume operation of Hazard Category 2 Nuclear Facilities, prior to ensuring line management readiness for safe nuclear operations.

ISSUE #10 (PORTS-INV-00-10). Incomplete radiological characterization of the workplace adversely affects the radiological control organization's ability to identify hazards and institute controls necessary to ensure consistent and appropriate radiological protection for workers.

AREA OF CONCERN 10A.

Facility-specific isotopic or radiological contamination characterization and analysis has not been conducted nor has the data from previous efforts been incorporated into a single current program document.

AREA OF CONCERN 10B.

The radiological protection program relies on personal knowledge and limited waste isotopic data to establish radiological controls, rather than a documented technical basis. This is a programmatic weakness in the radiological protection program.

ISSUE #11 (PORTS-INV-00-11). There is a lack of rigor, formality, and discipline in the development, maintenance, and implementation of the Bechtel Jacobs radiation protection program that impacts effective control of the hazards associated with radiological work.

AREA OF CONCERN 11A.

The radiation work permit (RWP) program at PORTS is not consistently implemented. The following inconsistencies were noted: workers were given inaccurate radiological information pertaining to work area conditions, the health physics requirements for BJC personnel accessing USEC facilities are not effectively captured by the RWP program; incomplete hazard information is sometimes used to develop RWPs, management initiatives for RWP compliance have not been totally effective, and changes in RWP development processes were attempted without issuing procedural guidance to personnel responsible for program implementation.

AREA OF CONCERN 11B.

Deficiencies exist in the conduct and documentation of radiological surveys. The EH Investigation Team noted cases where radiological survey data was recreated from memory, instead of field notes or other documentation. Several examples were noted of survey data entries of numeric measurements below minimum detectable activity (MDA), critical detection level or lower limit of detection for the survey instruments in use.

AREA OF CONCERN 11C.

The use of Thermoluminescent Dosimeters (TLDs) is inconsistent with DOE requirements. DOE radiation exposure reporting requirements stipulate the use of dosimeters accredited by the DOE Laboratory Accreditation Program. BJC does not strictly enforce these requirements. As a result, USEC personnel working on BJC-managed sites frequently use non-complying dosimeters that do not comply with DOE accreditation requirements, however, they do use NAVLAP approved dosimetry, approved by the NRC.

ISSUE #12 (PORTS-INV-00-12). The PORTS radiological air sampling program does not fully support the detection and evaluation of either the level or the concentration of airborne radioactive material at work locations.

AREA OF CONCERN 12A.

The absence of approved procedures for air monitoring equipment calibration and the inadequate implementation of sample analysis and the Derived Air Concentration (DAC) hour determination prevents the air sampling program from being fully implemented.

ISSUE #13 (PORTS-INV-00-13). Occupational safety and health hazards are not adequately identified or analyzed prior to performing work, resulting in increased risk of injury and illness to workers.

AREA OF CONCERN 13A.

Work requests failed to identify and document all hazards for certain work activities. Hazards are not adequately identified in hazard reviews in the subcontractor work packages. Subcontractor workers were reported as entering non-permitted confined spaces without consideration or knowledge of confined space hazards.

AREA OF CONCERN 13B.

Chemical and toxic material hazards are not sufficiently characterized and documented for some work activities to ensure appropriate controls are in place to preclude worker exposures and thresholds to involve industrial hygiene before work is performed. Hazard identification and evaluation processes rely on workers memory rather than a documented technical basis.

AREA OF CONCERN 13C.

Personal air sampling for hazardous chemicals is not routinely performed and key sampling parameters are not documented on the sample data form, the work procedure, the job hazards analysis, or elsewhere in the work package.

AREA OF CONCERN 13D.

Exposure assessments are not routinely documented for noise, airborne chemical hazards, or ergonomic hazards; nor are they periodically reevaluated or adequately documented to reflect changes in facility conditions.

AREA OF CONCERN 13E.

MSDSs are not adequately managed or routinely referenced to identify potential chemical hazards.

ISSUE #14 (PORTS-INV-00-14). Effective safety programs have not been implemented in hazard communications, ergonomics, confined spaces, air sampling for hazardous chemicals, occupational noise and hearing conservation, bloodborne pathogens, and facility emergency response.

AREA OF CONCERN 14A.

Line managers are not familiar with responsibilities as defined in safety and health programs and procedures. Procedures in these areas are deficient and clear roles and responsibilities between BJC and subcontractor personnel are not defined.

AREA OF CONCERN 14B.

WASTREN is not compliant with all requirements of Exhibit G or respective safety programs; key elements of some safety programs have not been developed at the subcontractor level.

AREA OF CONCERN 14C.

Ergonomic programs have not fully matured and formalized ergonomics training is not provided to workers, supervisors or safety professionals. Supervisors are not provided instruction on identifying ergonomic hazards or using ergonomic equipment.

AREA OF CONCERN 14D.

BJC facility emergency packets are deficient, outdated and not in compliance with OSHA programs. Several deficiencies were observed in BJC building emergency packets and pre-fire plan information, including lack of required nuclear criticality safety and other reviews, inadequate chemical inventory and MSDS information, lack of specific building layout information, and outdated emergency contact lists.

ISSUE #15 (PORTS-INV-00-15). Bechtel Jacobs and its subcontractors do not effectively implement some occupational health requirements.

AREA OF CONCERN 15A.

The requirements of DOE Order 440.1A, Worker Protection Management, Chapter 19, "Occupational Medicine" or equivalent requirements have not been integrated into the DOE/BJC WSS process. Elements not established include: methods for identifying and communicating workplace hazards to medical professionals, comprehensive medical surveillance programs, performance of targeted examinations, and methods for communicating examination results to responsible management.

AREA OF CONCERN 15B.

Clearly defined roles and responsibilities for BJC and WASTREN Line Management, ES&H personnel, and Emergency Management to provide information to the medical provider concerning hazards and health effects that could impact workers, have not been established in site specific documents. The requirements are necessary to ensure compliance with DOE Order 440.1A and should be clearly communicated through plant safety and health, policies and procedures.

ISSUE #16 (PORTS-INV-00-16). OR has not conducted effective oversight of ES&H or ensured that Bechtel Jacobs and its subcontractors effectively implement all applicable DOE and regulatory requirements.

AREA OF CONCERN 16A.

Inadequate Requirements Management. ES&H performance has not been acceptable in several areas in which the applicability of key DOE directives, equivalent industry standards, or appropriate regulations has not been made clear. A number of applicable DOE directives have not been included in the work smart standards for Bechtel Jacobs, but have been classified as guidance for flowdown to subcontractors. Most of the directives establish DOE requirements and expectations for contractor management and administrative systems. Because some of these directives were not fully addressed through other equivalent standards, requirements were sometimes either omitted or not clearly captured in ES&H programs and procedures. These directives include DOE Orders 5480.23, requiring SAR updates, DOE Order 440.1A, *Work Protection Management*, DOE Order 425.1 and DOE STD 3006-95, addressing readiness reviews for start and restart of nuclear facilities, DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, DOE Order 5400.1, *General Environmental Protection*, and DOE Order 5400.5, *Radiation Protection of the Public and the Environment*.

AREA OF CONCERN 16B.

Insufficient Operational Awareness, Performance Monitoring, and Appraisal - There is a lack of oversight and direction by the headquarters program offices and OR, and a general lack in the execution of the oversight function in the Portsmouth Site Office. Since 1997 there have been no formal safety or health appraisals by ORO or DOE Headquarters, excluding an ES&H and Quality Assurance "assist visit" in November 1999, driven by issues identified by the Oversight investigation at Paducah last fall and the ISMS verification in January 2000. Further, there was no evidence that the Portsmouth Site Office had requested safety and appraisal assistance from OR in recent years. OR's direction to the Portsmouth Site Office regarding contractor oversight under the management and integrating contract, outlined in a January 1998 letter, was that oversight emphasis would be on "establishing policies, standards, baselines, and objectives and measuring performance rather than focusing on day-to-day oversight and control." However, this reduced emphasis on day-to-day oversight was not accompanied by increased emphasis on ES&H performance objectives or monitoring. The DOE system for identifying management responsibilities for buildings and equipment is not comprehensive. Therefore, accurate lease and inventory lists, assigned and accountabilities that are clearly communicated to USEC and the DOE Portsmouth Site Office.

AREA OF CONCERN 16C.

Training, Qualifications, and Staffing. The DOE Portsmouth Site Office has not implemented a formal program to ensure personnel assigned to oversee contract performance maintain adequate proficiency in areas related to safety and health. A training requirement matrix is not rigorously maintained. DOE personnel do not aggressively pursue in depth instruction in safety to complement their training in basic compliance areas. Cross training in other disciplines to improve the effectiveness and efficiency of the Portsmouth Site Office staff in performing its oversight function is not vigorously encouraged. Neither OR nor the Portsmouth Site Office ensures that Bechtel Jacobs and the subcontractor are meeting the intent of the requirements contained in American National Standards Institute (ANSI) Standard 8.20, Nuclear Criticality Safety Training. The site lacks sufficient professional expertise in some key areas to effectively execute necessary duties. DOE Portsmouth Site Office personnel did not participate in the PORTS Bechtel Jacobs bioassay program.

AREA OF CONCERN 16D.

Concerns With The Integrated Safety Management System. The lack of a formal readiness assessment and subsequent identification of deficiencies in procedures and conduct of operations, call into question the validity of the OR ISMS verification results. The recent ISMS verification by OR did not identify many of the existing compliance issues for PORTS, identified by the investigation team. The OR combined Phase I and II verification of the ISMS for Bechtel Jacobs illustrates the investigation team's concern about the lack of rigor in DOE line oversight. The findings of this investigation team are not consistent with the conclusions of the verification team that the ISMS verification objectives and criteria were met as they apply to PORTS. Specifically, the investigation team concluded: in many cases, Phase I ISMS program implementing documents were not yet adequate and implementation deficiencies precluded a determination that related Phase II criteria and objectives were met.

ISSUE #17 (PORTS-INV-00-17). Bechtel Jacobs oversight of ES&H performance has not been effective in ensuring that subcontractors properly implement all required DOE and Federal regulations.

AREA OF CONCERN 17A.

The BJC subcontractor formation teams and procurement process do not always incorporate current and consistent requirements into subcontracts and BJC Subcontractor Technical Representatives do not ensure that applicable subcontractor requirements are consistently delineated in subcontractor submissions. WASTREN's list of work smart standards includes superseded and outdated DOE directives, procedures, regulatory standards, and guides that are not all appropriate for hazard category 2 nuclear facilities.

AREA OF CONCERN 17B.

Weaknesses in the Readiness Assessment Process. Bechtel Jacobs oversight of ES&H programs has not identified important implementation weaknesses. BJC authorized the new plant services, maintenance and waste operations subcontractor to proceed with work in January 2000 without adequate assurance of readiness in ES&H. No formal transition plan was developed.

AREA OF CONCERN 17C.

There are many program and implementation weaknesses in BJC's operational awareness and appraisal programs. The Investigation Team observed several weaknesses in procedural processes, industrial safety, industrial hygiene, work planning, and work control. No central file is maintained for ES&H deficiencies. BJC corporate Non-Conformance procedure does not require a significance review to establish whether root cause analysis is required for a reported deficiency.

AREA OF CONCERN 17D.

BJC has not established a system at PORTS to evaluate the ES&H and skills training received by principal subcontractors. BJC maintains a training requirement matrix for safety and health compliance training that is supplied by USEC. Certain modules are not site-specific, require self-study instead of classroom training, or do not require training for some BJC personnel. Consequently, not all personnel are trained for their assignments.

AREA OF CONCERN 17E.

The BJC's investigation and analysis of occurrence reports is inadequate. The Investigation Team identified several 1999 event reports in which: events were not correctly identified or evaluated, corrective actions did not adequately address the causes, and corrective actions were not fully effective in preventing reoccurrences.

Table 4. Crosswalk of Areas of Concern to Issues

Issue	Page	Areas of Concern
PORTS-INV-00-01	9	
• Collection and analysis of radiological data lacked rigor necessary to . . .	9	1A
• Have not integrated applicable DOE requirements for public and . . .	9	1B
• Program Management does not specify in Program Documents that . . .	9	1B
• The relationship between the RCRA corrective action process and . . .	9	1B
• The lack of adherence to proper radiation protection standards and . . .	9	1B
• "No Further Action" decisions submitted, as part of the regulatory. . .	9	1B
• Lack of compliance with DOE Order 5400.5 and the derivation and . . .	9	1B
• Lack of compliance with DOE requirements for radiological cleanup . . .	9	1B
• RFIs and subsequent environmental restoration documents did not . . .	9	1B
• Design and conduct of radiological surveys and sampling in support . . .	9	1A
• RFI risk assessments underestimate radiological risks due to . . .	10	1B
• Isotopic uranium analyses was requested for a limited number of samples.	10	1A
• Actual isotopic measurements were not used in the calculation of . . .	10	1A
• Detection limits for radiological constituent analyses were not . . .	10	1B
• RFI incorrectly states that isotopic sampling data revealed no evidence . . .	10	1A
• PORTS samples that were not analyzed for isotopic uranium likely . . .	10	1B
• Assessment of risk related to uranium daughters at the X-705A and B . . .	10	1B
• Limited sampling and analyses for transuranics has been performed at . . .	12	1A
• Sites where hazardous substances had been handled were identified by . . .	12	1C
• Screening and evaluation of additional areas is necessary.	12	1C
PORTS-INV-00-02	12	
• Monitoring is not performed to determine the effectiveness of the . . .	12	2A
• No written report was submitted to the regulatory agencies on the . . .	12	2A
PORTS-INV-00-03	13	
• Deficiencies in maintaining LLW storage containers and areas.	13	3A
• Deficiencies in long-term outdoor storage of radioactive contaminated . . .	13	3A
• Absence of clears responsibility between DOE and USEC for . . .	13	3A
• Unauthorized creation of DOE Material Storage Areas (DMSAs) by . . .	13	3A
• Storage of LLW outdoors, some in standing water.	13	3A
• Many drums and boxes stored in an uncontrolled environment . . .	13	3A
• Many drums, boxes, storage containers have deteriorated over time.	13	3A
• 298 B-25 and orange boxes and 51 converter shells near X-744G are . . .	13	3B
• Good characterization data for the containers near X-744G does not . . .	13	3B
• Disposition plans and strategies have not been established for the . . .	13	3A
• A large quantity of material is stored outside and creates a potential . . .	13	3A
• There are no historical records to support the assertion by PORTS that . . .	13	3B
• Significant quantities of contaminated equipment, materials and . . .	13	3A
• There is no long-range plan for disposal of scrap and D&D waste at . . .	13	3A
• Ad Hoc waste disposal decisions to meet current needs for remediation . .	13	3A
• DOE system for identifying management responsibilities for buildings . . .	14	3A

Table 4. Crosswalk of Areas of Concern to Issues

Issue	Page	Areas of Concern
• Some DOE buildings and equipment shown as being leased to USEC . . .	14	3A
• Some buildings and equipment shown as retained by DOE are being . . .	14	3A
• Some abandoned equipment is not being managed by either DOE or . . .	14	3A
• Concerns include safety (e.g., unlabeled tanks and hazard identification), .	14	3A
• Deficiencies in DOE leasing lists and unclear responsibilities and . . .	14	3A
• Two fluorine generator cells were shown as leased to USEC but remain . . .	14	3A
• USEC leased equipment list includes several items from X-344C, a . . .	14	3A
• Several uranium hexafluoride (UF_6) cylinders were identified as a . . .	14	3A
PORTS-INV-00-04	*14*	
• The justification for eliminating various environmental media from . . .	14	4A
• It was also determined that neither the 1996 nor the 1999 EMP was . . .	14	4A
• The current radiological environmental surveillance program at PORTS . .	15	4A
• DOE does not conduct sampling of other media, such as air, soil, . . .	15	4A
• The actual sampling frequency and technical basis should be specified . . .	15	4A
• There is no mechanism to ensure that USEC data collected and . . .	15	4A
• There is no documented justification for the lack of routine isotopic . . .	15	4A
• The correlation of total uranium to isotopic uranium is not defined in . . .	15	4A
• Data is not available to demonstrate compliance with isotope specific . . .	15	4A
• The Annual Site Environmental Report states that the ratio of alpha . . .	15	4A
• Personnel responsible for reviewing results of the sampling program . . .	15	4A
• Annual site environmental reports provide data on gross alpha . . .	15	4A
• There is no method for correlating or evaluating the gross alpha . . .	15	4A
• The environmental surveillance program does not provide for the . . .	15	4A
• Since direct sediment sampling is not included as part of the overall . . .	16	4A
• The current design of the surface water sampling program does not . . .	16	4A
• The X-230J7 belongs to USEC and is not sampled by DOE despite the . . .	16	4A
• The outtlow from the groundwater treatment facilities is only monitored. .	16	4A
PORTS-INV-00-05	16	
• The 1998 annual site environmental report cites a maximum air . . .	16	5A
• While the procedures and estimates reviewed for estimating the . . .	16	5A
• The magnitude of fugitive emissions at PORTS is not known, and this . . .	16	5A
• Dose calculations do not include any contribution to dose from . . .	16	5A
• While the use of ambient air data may be acceptable, the technical . . .	17	5B
• Several air samplers have been out of service for more than six months, . .	17	5B
• DOE has also not routinely been requesting, receiving, or evaluating air . .	17	5B
• The investigation team identified two air emission sources that Bechtel . . .	17	5A
• No health physics surveys have been performed on the air side of the . . .	17	5A

PORTS-INV-00-06	17	
• Many of the requirements associated with DOE environmental . . .	17	6B
• Not all requirements of DOE Order 5400.1 and 5400.5 are being . . .	17	6B
• OR did not establish Bechtel Jacobs contract standards consistent with . . .	17	6B
• Some Bechtel Jacobs technical personnel were not aware that DOE . . .	18	6B
• Some DOE employees in Oak Ridge and at PORTS who have line . . .	18	6B
• There is no apparent contractual requirement for Bechtel Jacobs to . . .	18	6B
• The investigation team found no evidence of an environmental . . .	18	6A
• The investigation team found a specific deficiency in addressing how . . .	18	6A
• Weaknesses exist in the PORTS Groundwater Protection Program . . .	18	6B
• The network of wells included in the Plan is not distributed to all areas . . .	18	6B
• Limited staffing has impacted waste management programs.	18	6A
• The frequency of programmatic reviews and evaluations by subject . . .	18	6A
• RCRA/TSCA expertise within Bechtel Jacobs has not been retained . . .	18	6A
• Programmatic issues and concerns are not as effectively addressed.	19	6A
• DOE and Bechtel Jacobs have not effectively managed the personnel . . .	19	6A
• Sufficient technical personnel have not been assigned to determine data . . .	19	6A
• Environmental radiological information is not effectively interpreted . . .	19	6A
• There are no resident DOE or Bechtel Jacobs experts with . . .	19	6A
• Technical errors were found in environmental publications, including . . .	19	6A
• There is a lack of appropriate health physics review and accountability . . .	19	6A
• Fundamental errors were also found in the various Quadrant RFI reports	19	6A
• Unusual sampling data is not appropriately reviewed and investigated.	19	6A
• Influent samples from groundwater treatment facilities have at times . . .	19	6A
PORTS-INV-00-07		
• There were many cases where work was not adequately defined.	27	7A, 7B
• While "Trouble Shoot and Repair" is a common term, there were no . . .	27	7B
• In some cases, workers had to have the Maintenance supervisor call the . . .	27	7B
• During interviews, craft workers could not define thresholds for . . .	27	7A
• A documented priority system, required by procedure PO-WP-2208, . . .	29	7B
• In numerous work packages, administrative requirements were not . . .	29	7A, 7B
• The pre-job briefings observed for Plant services maintenance were . . .	29	7A
• Bechtel Jacobs procedure PO-FM-P2209, "Maintenance Management," . . .	29	7A
• There were training deficiencies on the SOMAX computerized work . . .	29	7B
• Training deficiencies in lockout/tagout resulted in observed . . .	29	7A
• Safety significant deficiencies were identified during observation of . . .	29	7A
• Feedback and improvement systems required by DOE Policy 450.4, . . .	30	7A
• During one safety topic discussion, three of 16 craft workers were . . .	30	7A
PORTS-INV-00-08		
• The lists of events or activities requiring a procedure is not based on . . .	32	8A
• Risk or hazard based criteria for determining the types of technical . . .	32	8A
• Although the procedure requires verification and validation of . . .	32	8A
• The procedure provides minimal guidance on use of procedures, does . . .	32	8A
• Consequently, several subcontractor procedures containing changes in . . .	32	8B
• Bechtel Jacobs allowed the Plant services, maintenance, and waste . . .	32	8B

• The subcontractor work control procedure lacks the detail necessary . . .	32	8C
• Some Lockheed Martin procedures currently used for radiological . . .	33	8D
• No equivalent procedures that have been screened for USQs as required . .	33	8D
• For example, a number of the responsibilities assigned to line managers, .	33	8E
• Examples include worker area hazard communication training, labeling. . .	33	8E
PORTS-INV-00-9		
• The investigation team identified a number of program and . . .	27	9A
• Issue 7, The Bechtel Jacobs ISMS supplement which specifies . . .	27	9A
• Weaknesses in ISMS programs and implementation resulted in . . .	28	9A
• Issue 9. Bechtel Jacobs has not implemented an effective readiness . . .	33	9A
• Bechtel Jacobs did not perform a readiness assessment as required by . . .	33	9A
• During the recent OR ISMS combined Phase I and II verification of . . .	33	9A
• Bechtel Jacobs allowed their new site services subcontractor to assume . . .	2	9B
• The issues in this section address weaknesses in procedure . . .	31	9B
• Issue 8. Procedures are not always adequately developed, . . .	31	9B
• Bechtel Jacobs allowed the Plant services, maintenance, and waste . . .	32	9B
• While no immediate safety hazards were discovered and many of the . . .	32	9B
• Procedure PQ-A-1510, Readiness Evaluations, the Bechtel Jacobs . . .	33	9B
• Although the ISMS supplement references DOE Order 425.1A for . . .	33	9B
• Deficiencies were apparent during the operational transition to . . .	34	9B
• Bechtel Jacobs took several important steps to assure that the Plant . . .	45	9B
• Procedures to be used by this new subcontractor were reviewed and . . .	45	9B
• Operational Authorization: Bechtel Jacobs authorized the services, . . .	46	9B
• The rigor of conduct of operations for the operation of the PORTS . . .	47	9B
• Premature Authorization for the Subcontractor to Proceed with Work.	49	9B
• Important DOE standards were not included or were not fully addressed, .	3	9C
• DOE delineates the policy and expectations regarding conduct of . . .	31	9C
• The PORTS SAR assumes that operations are carried out by . . .	31	9C
• The ISMS supplement references DOE Order 425.1A, Startup and . . .	33	9C
• Issue 16. OR has not conducted effective oversight of ES&H or . . .	46	9C
• DOE Order 5480.19, Conduct of Operations Requirements for DOE . . .	47	9C
•		
PORTS-INV-00-10		
• The lack of facility-specific isotopic data adversely impacts . . .	35	10A
• . . . the effectiveness and accuracy of the air sampling, . . .	35	10A
• . . . accuracy of the contamination control program . . .	35	10A
• . . . accuracy of the bioassay/dosimetry program . . .	35	10A
• Consequently, isotopic characterization of facilities and operations. .	35	10B
• Therefore, hazard analysis may rely upon incomplete . . .	35	10B
• . . . plans to undertake radiological characterization activities . . .	35	10B
•		
PORTS-INV-00-11		
• The radiation work permit (RWP) program at PORTS is not . . .	35	11A
• Cases were identified where the RWP program gave workers . . .	35	11A
• . . . conditions reflect the current radiological postings in the . . .	35	11A
• Many surveys used for radiological control purposes were not . . .	35	11A
• Bechtel Jacobs routinely uses historical radiological survey data . . .	35	11A
• Bechtel Jacobs has not assured that health physics requirements . . .	35	11A
• In addition, the investigation team identified cases where . . .	35	11A

• Incomplete hazard information is sometimes used to develop . . .	35	11A
• . . . RWPs were developed solely upon verbal information . . .	35	11A
• . . . Management initiatives for RWP compliance have not been . . .	35	11A
• Changes in RWP development processes were implemented . . .	36	11A
• Deficiencies exist in the conduct and documentation of . . .	36	11B
• . . . this survey was recreated from memory rather than from field . . .	36	11B
• The investigation team identified incomplete radiological surveys . .	36	11B
• . . . , the survey results may not reflect actual radiological . . .	36	11B
• The use of TLDs is inconsistent with DOE requirements . . .	36	11C
• Bechtel Jacobs permits individuals to work at different . . .	36	11C
• In addition, USEC employees who perform work for DOE . . .	36	11C
• DOE personnel did not comply with PORTS' dosimetry program . . .	36	11C
PORTS-INV-00-12		
• The absence of approved procedures for air monitoring . . .	37	12A
• The investigation team observed the use of unapproved . . .	37	12A
• Radiological air monitoring program elements as required by . . .	37	12A
• . . . some radiological air sampling procedures were inadequate . . .	37	12A
• Procedures and protocols have not been established to accomplish . .	37	12A
• SEC RADCON failed to take corrective action when program . . .	38	12A
PORTS-INV-00-13		
• . . ., the hazard review for recent air handler . . .	39	13A
• Furthermore, subcontractor workers recently . . .	38	13A
• However, the work package did not address . . .	40	7A, 7B, 13A
• Hazard identification and evaluation process . . .	40	13B
• Some hazards are not periodically . . .	40	13C
• On January 8, 2000, alumina material . . .	40	13C
• . . . a local DOE staff member identified that . . .	40	13D
• MSDSs are not adequately managed . . .	40	13B, 13C
PORTS-INV-00-14		
• Line managers are not familiar with their line management . . .	41	14A
• The responsibility for testing and maintaining these exhaust lines . . .	41	14A
• . . . WASTREN hazard communication procedure has not been . . .	41	14B
• Also, workers previously trained in confined space were not . . .	41	14B
• One worker who performed maintenance in air handling units had . .	41	14B
• For some safety and health programs (e.g., bloodborne . . .	41	14B
• For example, personal air sampling is not being performed as . . .	41	14C
• In addition, elements of the subcontractor's site-specific hazard . . .	42	14C
• Furthermore, the subcontractor's ES&H Plan does not address . . .	42	14C, 14D
• Key supporting elements of some of these safety programs, . . .	42	14C
• Ergonomic programs at PORTS have not fully matured.	42	14E
• Supervisors are not provided instruction on identifying . . .	42	14E
• . . . , recommendations from this assessment (e.g., two-person . . .	42	14E
• Bechtel Jacobs facility emergency packets are deficient, outdated, . .	42	14F
• There are no facility emergency packets for the lithium storage . . .	42	14F
PORTS-INV-00-15		
• Although DOE Order 440.1A has been . . .	43	15A
• Several key requirements of this order . . .	42	15A

• These requirements of this order . . .	43	15A, 15B
• USEC employees who perform work . . .	43	15B
• Medical services for DOE Site Federal . . .	43	15B
• First, Bechtel Jacobs must further define . . .	43	15B
• Second, Bechtel Jacobs subcontractors . . .	43	13A, 13C
• Bechtel Jacobs did not fully implement . . .	43	7A
• For Bechtel Jacobs the challenge is . . .	43	7A
• For Bechtel Jacobs subcontractor's . . .	43	13A
• However, significant program implementation	43	7A, 13A
• Specific Safety and Health areas . . .	43	13A, 13C
PORTS-INV-00-16 (DOE Issue)		
• The DOE system for identifying management . . .	14	16B
• Elimination of various environmental media from sampling . . .	14	16A
• Many of the requirements of 5400.1&5 are not . . .	17	16A
• Insufficient environmental staff.	19	16C
• 5480.19 not included in work smart standards.	31	16A
• Question on validity of OR ISMS assessment.	34	16D
• Lack of line oversight of the BJC conduct of operations . . .	34	16B
• DOE did not participate in the urinalysis program.	36	16C
• Insufficient DOE oversight of subcontractor rad safety.	38	16B
• DOE Line Management responsibility for safety.	38	16B
• Competence commensurate with responsibilities. Site Office . . .	46	16C
• Inadequate requirements management.	46	16A
• Insufficient Operational Awareness, Performance Monitoring . . .	47	16B
• OR Phase I and II ISMS verification shows lack of rigor . . .	47	16D
• Technical staff not held accountable for ES&H oversight.	47	16B
• No documented evidence of compliance with Portsmouth's Site . . .	48	16B
• No functional or management appraisals.	48	16B
• Insufficient review of occurrence reports.	48	16B/16C
• Training deficiencies.	48	16C
PORTS-INV-00-17		
• Exhibit E, Section 10200, "Subcontractor . . .	49	17A
• However, it does not clearly identify . . .	49	17A
• The investigation team identified . . .	49	17A
• No formal transition plan was developed . . .	49	17B
• Bechtel Jacobs authorized work to proceed . . .	49	17B
• Process were not in place for maintaining . . .	49	17B
• Additionally, no conduct of operations . . .	49	17B
• Significant procedural deficiencies also existed . . .	49	17B
• Bechtel Jacobs did not assure . . .	49	17B
• Program implementation deficiencies were . . .	49	17B
• Bechtel Jacobs oversight of ES&H programs . . .	49	17C
• The investigation team identified numerous . . .	49	17C
• Fragmented plant-level implementing instructors . . .	50	17C
• No central file is maintained . . .	50	17C
• Further, the corporate non-conformance procedure . . .	50	17C
• Revisions of plant procedures for implementing . . .	50	17C
• Bechtel Jacobs oversight procedures do not . . .	50	17C

• The investigation team observed weaknesses . . .	50	17C
• . . ., currently subcontractors are only required . . .	51	17D
• Certain USEC training modules . . .	51	17D
• Although training records are being reviewed . . .	51	17D
• . . ., personnel who are required to obtain . . .	51	17D
• The subcontractor has not implemented . . .	51	17D
• However, Line Management has not insured . . .	51	7A
• . . ., many oversight functions at all levels . . .	51	17G
• The investigation team identified May 1999 . . .	50	17E

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Table 5. Information and Data on Corrective Action Sheets

Information/Data	Purpose
Issue Statement	Ties corrective action to one of 17 issues cited in DOE Oversight report.
Area of Concern	Summarizes the individual observations, findings, and weaknesses cited by the DOE Oversight report that correlate to one of the 17 issues and are addressed by a common corrective action.
Root Cause	Indicates a description of the circumstances of information related to the issue.
ISMS Evaluation	Indicates the linkage to the five functions and/or seven Guiding Principles of ISMS
Description of Corrective Action	Provides the detailed description of the corrective action and sub-action to be implemented. **The specific actions are in bold type to distinguish from rationale and background statements.**
BJC Responsible Person	Identifies the individual responsible for implementing and documenting the corrective action.
Corrective Action Initiation Date	Indicates when the corrective action has been or will be initiated.
Expected Completion Date	Indicates the expected date of completion for each action or sub-action.
Corrective Action Closure Documentation Required	Specifies the documentation or other information that must be compiled in an evidence file to allow for independent verification of closure.
DOE Support Action Required	Identifies any necessary DOE action not within the control of BJC, e.g. approvals of revised plans, BCPs.
Link to Other Corrective Action	Identifies where a specific action is linked to another action.
Corrective Action Tracking System	Specifies the mechanism for tracking corrective action closure.

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Table 6. Crosswalk to PGDP, ISMS and PORTS Corrective Action Plans

Paducah Corrective Actions	Related Portsmouth Corrective Actions
Corrective Action 2D-1. BJC will appoint an environmental as low as reasonably achievable (ALARA) Program Manager for Paducah.	**Corrective Action 4A-3**
Corrective Action 2D-2. BJC will prepare and submit an environmental ALARA plan for Paducah to DOE Paducah Site Office for approval incorporating the provisions of DOE Order 5400.5 as a best management practice.	**Corrective Action 4A-4**
Corrective Action 10A-1. Each Manager of Projects and Functional Manager will revise their respective FY 2000 and subsequent Management Assessment Schedule to include a monthly management assessment that focuses on implementation of procedures in the field by both BJC and subcontractors.	**Corrective Action 7B-2** **Corrective Action 8B-2**
Corrective Action 10A-2. The Manager of P/QA will revise Independent Assessment Schedules for FY 2000 and subsequent years to implement a semi-annual independent assessment of each project and function that focuses on procedure implementation. The assessments will be completed by the end of the FY.	**Corrective Action 7B-3**
Corrective Action 7A-1. Phase 1: BJC will construct maps of all areas for which BJC is responsible to delineate all of those outdoor areas and buildings or other structures that have radiological postings or unposted areas with known radiological contamination above specified background levels.	**Corrective Action 10A-1**
Corrective Action 7A-2. Phase 2: BJC will use existing data to determine the radionuclides and lung solubility class expected to be present in each posted area. Both identity and lung solubility class information are required to accurately characterize the hazard. This data will be presented on maps and supported by a documented evidence file containing the reference data and reports. BJC will also identify those areas where there is insufficient data in order to determine the identity of the radionuclides and/or the lung solubility class.	**Corrective Action 10A-2**

Corrective Action 7A-3. Phase 3: BJC prepare and implement a sampling plan and schedule to be used to obtain the additional data identified in Phase 2. A rationale for the sampling program and schedule will be included. Following completion of sampling and analysis, the results of Phase 3 will be used to update the radionuclide hazard maps.	**Corrective Action 10A-3**
Corrective Action 8I. BJC will prepare and submit an exemption request from 10 CFR 835 that proposes that USEC employees and subcontractors be permitted to use only their National Voluntary Laboratory Accreditation Program (NAVLAP) dosimeters when DOE services are performed by USEC employees and subcontractors.	**Corrective Action 12A-1**
Corrective Action 8C. BJC will prepare an Air Monitoring Technical Basis document to supplement existing procedures and guidance documents and will address the use of Derived Air Concentrations (DACs), placement of air samplers, conditions requiring isotopic analyses, and timeliness of air sample analytical results.	**Corrective Action 12A-1**
Corrective Action 11A-1. At Paducah, BJC will prepare and interface protocol and will hold a quarterly interface meeting between the USEC medical director, BJC industrial hygiene, safety, and health physics personnel to discuss ongoing and planned work activities and to identify the chemical, biological, radiological, and physical hazards associated with the work. The interface protocol will be submitted to the DOE Paducah Site Office by March 1, 2000. Minutes of the meeting for FY 2000 will be completed and submitted to DOE.	**Corrective Action 15B-2**
Corrective Action 10C. The Vice President and General Manager of BJC will issue a Directive in January 2000 to ensure that all BJC Managers of Projects shall sign verification for all subcontractor ES&H procedure packages under their respective purview that the process has been followed. The verifications by the Managers of Projects will commence on February 1, 2000.	**Corrective Action 17A-2**

Corrective Action 14A-1. BJC will prepare and issue a company-wide (Level A) procedure that defines the overall process of subcontractor oversight. The procedure will define the roles and responsibilities of BJC personnel who perform oversight and outline a graded approach to oversight based on the hazards of the subcontractor activities. The procedure will complement the BJC ISM Program, which focuses on identifying requirements up front. Several other initiatives are underway to improve the oversight of subcontractor ES&H performance.	Corrective Action 17A-3

ISMS Corrective Actions	Related Portsmouth Corrective Actions
SME-CON-3.1-OFI.1 Review and revise subcontract specifications to require hazard assessment changes be approved by BJC.	**Corrective Action 7A-1** **Corrective Action 7B-1** **Corrective Action 13A-1** **Corrective Action 17B-1**
SME-MNT.3-1-OFI.1 Review and revise subcontract specifications and/or Proforma to incorporate work control requirements into subcontracts where fieldwork is being performed.	**Corrective Action 7B-5** **Corrective Action 13A-2**
OP.1-5-OFI.2 Develop ISMS performance criteria for use by STRs and SAs in performing subcontractor ES&H performance evaluations.	**Corrective Action 7A-2** **Corrective Action 17B-2**
HAZ.5.4-OFI.3 Issue BJC Authorization Agreement Program procedure.	**Corrective Action 8A-3** **Corrective Action 8A-4**
HAZ.2-4-OFI.2 Revise DE-A-1102, Safety Documentation, to incorporate appropriate requirements for periodic review and update of safety authorization basis (SAB) documentation.	**Corrective Action 8A-5** **Corrective Action 8A-6**
HAZ.3-1-1OFI.1 Review and revise subcontract specifications and/or Proforma to incorporate flowdown requirements for SAB and Authorization Agreements into applicable subcontracts.	**Corrective Action 8A-4**
HAZ.5-1-OFI.4 Revise subcontract specifications and/or Proforma to incorporate flowdown requirements for SAB and Authorization Agreements into applicable subcontracts.	**Corrective Action 8A-4**
DOE Office of Oversight RELATED-OFI Develop specific tools for conducting oversight of ISMS implementation in the field. Communicate information on available ISMS oversight tools to STRs and SAs. Analyze feedback from oversight activities and compile results.	**Corrective Action 7A-4** **Corrective Action 17B-3** **Corrective Action 17B-4** **Corrective Action 17B-5**

TABLE 7. LINKAGE OF PORTS MANAGEMENT OVERSIGHT CONCERN ISSUES 16 WITH MANAGEMENT OVERSIGHT COMPONENTS IN ISSUES 1 THROUGH 15 AND 17

Corrective Actions (CA) Associated With Issue 16:

INADEQUATE REQUIREMENTS MANAGEMENT

CA 16A-1: Use the change control process of ORO Order 250, Chapter V to include, where appropriate, the addition of a select number of National Standards, Regulations, and DOE Orders to the WSS.

INSUFFICIENT OPERATIONAL AWARENESS, PERFORMANCE MONITORING AND APPRAISAL

CA 16B-1: Review procedure PORTS-SA-501, and revise as necessary to assure that appropriate ES&H activities are included in the facility walkthroughs and that the walkthroughs are appropriately documented. Provide training to Site Office staff on the new procedure.

CA 16B-2: Implement line management oversight in accordance with DOE-ORO O 450 and EM-4.2, Facility Walkthroughs.

CA 16B-3: Implement independent ES&H oversight activities in accordance with DOE-ORO O 450.

CA 16B-4: DOE HQ will conduct a quarterly Integrated Program Performance Review at the Portsmouth Site.

CA 16B-5: Train contracting and program management staff regarding appropriate performance measures and monitoring required to properly administer a Management & Integration Contract.

CA 16B-6: The PORTS Site Office, DOE-ORO and DOE-HQ will work together to develop a listing of the types of comments to be routed and the personnel to whom they will be routed.

CA 16B-7: DOE will review the lease and inventory lists and any discrepancies will be resolved.

CA 16B-8: NSC reviews of DOE retained equipment in USEC leased facilities will be reviewed and/or performed.

TRAINING, QUALIFICATION, AND STAFFING

CA 16C-1: Review Site Office staff position descriptions to identify and document staff members with contractor performance oversight responsibilities. The appropriate staff IDPs will then be modified to reflect the safety and health recommended training.

CA 16C-2: Develop and maintain a training matrix to reflect the ES&H training requirements and the revised IDPs.

CA 16C-3: Develop a schedule where on a monthly basis, individual staff personnel that are already trained in a specific area will conduct basic training in their area of expertise.

CA 16C-4: DOE/ORO Management has approved A permanent full-time Facility Representative position for the Portsmouth Site Office. DOE/ORO Management is planning a full-time Health Physics position for the Portsmouth Site Office.

CA 16C-5: In accordance with 10CFR835 and as specified in the Bechtel Jacobs procedure for site personnel issued dosimeters, as of November 1999, all DOE Portsmouth Site Office staff, who have been issued a dosimeter are participating in the PORTS Bechtel Jacobs bioassay program.

CONCERNS WITH INTEGRATED SAFETY MANAGEMENT SYSTEM

CA 16D-1: Verify that all Opportunities for Improvement from the February ISMS Review have been performed.

CA 16D-2: Conduct additional reviews at PORTS to confirm Phase II ISMS implementation and safe work performance.

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
1A - The lack of rigor for sampling, analysis and evaluation of radiological data led to inadequate risk assessments.	6B - Work Organization / Planning Deficiency. The requirements for sampling and analysis procedures and the evaluation and utilization of radiological data were not adequately stipulated or implemented. The role of PORTS as an enrichment plant and the presence of uranium isotopes in higher concentrations than in natural uranium were not factored into the sampling, analysis and evaluation of radiological data. Actual isotopic measurements were not used in the calculation of radiological risk; rather, isotopic data were calculated using natural isotopic distributions.	Corrective Action 1A-1. Review DOE Orders including but not limited to DOE 5400.1 and 5400.5 to identify the relevant DOE radiological requirements for the PORTS cleanup program. Integrate these requirements into the verification sampling guidance document. Corrective Action 1A-2. Complete a radiological verification sampling program to obtain additional data to confirm the extent and level of radiological contamination, isotopic distribution of uranium and transuranics, on plantsite. Corrective Action 1A-3. Revise Life-Cycle Baseline (LCB) to include evaluation and preparation of a report, and further sampling. Corrective Action 1A-4. Re-evaluate data obtained from corrective action 1A-2 and issue report on results to assess extent and type of radionuclides and modify original risk assessment calculations, as appropriate. Corrective Action 1A-5. Evaluate the potential impacts of inadequate sampling and evaluation of radiological data on the PORTS RCRA Corrective Action Process. Develop an Action Plan, if required, to address the potential impacts.	Identifying and incorporating relevant DOE radiologi requirements into PORTS sampling guidance as prop by CA 1A-1 fully supports and is an integral part of (16A-1. Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatio awareness, performance monitoring, and appraisal wi provide assurance that the extent and distribution of radiological contamination on plantsite is adequately characterized (CA 1A-2). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatio awareness, performance monitoring, and appraisal wi provide assurance that further radiological characteri work on plantsite is planned, scheduled, and budgete (CA 1A-3). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatio awareness, performance monitoring, and appraisal w provide assurance that original risk assessment calcu are modified as appropriate (CA 1A-4). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatio awareness, performance monitoring, and appraisal w provide assurance that an action plan is developed, if required, to address potential impacts of previous inadequate sampling and analysis (CA 1A-5).
1B – Lack of integration between RCRA Corrective Action Process and DOE's potential future free release of areas to the public.	6E - Policy Not Adequately Defined, and 6B – Work Organization /Planning Deficiency Policy, which required end use planning and consideration of potential future free release of areas to the public, was not in place. The EH Investigation Team reported that a clear determination was not made between the need for long-term DOE custody and the future free release of areas to the public. As a result more stringent cleanup standards, particularly radiological cleanup standards, may have to be considered if DOE intends to keep open the option of potential free release of areas to the public.	Corrective Action 1B-1. Evaluate the potential impact of DOE's potential future free release of areas to the public on the PORTS Corrective Action Process. Corrective Action 1B-2. Develop Portsmouth Facility Disposition Strategy based upon DOE Office of Oversight guidance documents considering the expectations of OEPA under the RCRA Corrective Actions program.	CA 1B-1 is not related to Issue 16 corrective actions. Identifying and incorporating relevant DOE radiolog requirements into the PORTS Facility Disposition St is related to CA 16A-1 in that both promote the inclu relevant national standards in current and planned w

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
1C – Screening and evaluation of solid waste management units is incomplete.	6B - Work Organization /Planning Deficiency Procedures for reviewing environmental records and interviewing former PORTS employees were either inadequate or not followed. Personnel who were tasked with screening and evaluation of solid waste management units relied almost exclusively on RCRA Part B Permit for a complete listing of solid waste management units and missed several of them. The EH Investigation Team identified eight additional potentially-contaminated areas from interviews and historical record reviews.	Corrective Action 1C-1. Revise LCB to include scope definition and cost estimates, and evaluation of new units in accordance with procedures that are reviewed for completeness and updated, if necessary. Prepare appropriate BCPs for performing the new work. The following corrective actions are dependent on DOE approval and funding of BCPs: Corrective Action 1C-2. Identified units, including the eight potentially contaminated areas on page 11 of Vol. 2 of the Independent Investigation Report, will be evaluated to develop the basis for further action, if any. Corrective Action 1C-3. Investigation and sampling plans will be developed, as necessary, for OEPA approval prior to the initiation of field investigations. Corrective Action 1C-4. Corrective actions for additional work under the consent decree for OEPA will be developed, after evaluation of the potential impact on the RCRA Corrective Action Process and the RODs for the four quadrants.	CA 1C-1 is not related to Issue 16 corrective actions. Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that sites are properly evaluated (CA 1C-2). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that investigation and sampling plans are adequate (CA 1C-3). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that additional work is properly executed (CA 1A-4).
3A. Legacy LLW and scrap/surplus material containers are not stored and maintained in a manner consistent with best management practices, and there is no long-range plan for the disposition of scrap and D&D waste at PORTS.	6E – Policy Not Adequately Defined Best management practices were not followed in the storage of legacy LLW and scrap/surplus material at PORTS. The recently – established requirements of DOE Order 435.1 should apply for long-term storage of LLW, scrap and D&D waste in the absence of a long-range plan for the disposition of scrap and D&D wastes at PORTS.	Corrective Action 3A-1. Develop and implement best management practices for storage of LLW, scrap/surplus material and D&D wastes. Long-term storage procedures for these wastes should be developed in accordance with the requirements of DOE Order 435.1. Corrective Action 3A-2. Incorporate the current requirements for storage of LLW and scrap/surplus material into the long-range plan for the disposition of scrap and D&D wastes at PORTS. Corrective Action 3A-3. Provide a schedule and estimate for dispositioning waste currently stored outside by disposal or moving into space vacated by dispositioning waste stored indoors. Corrective Action 3A-4. Modify LCB and submit BCP to reflect disposition of waste. Corrective Action 3A-5. Complete shipment of LLW stored in outside areas at X-3346.	Identifying and incorporating relevant DOE Order 435.1 requirements into LLW storage BMPs is related to CA 16A-1 in that both promote the inclusion of relevant national standards in current and planned work.(CA 3A-1) denitrifying and incorporating relevant DOE storage requirements into long-range disposition plans are related to CA 16A-1 in that both promotes the inclusion of relevant national standards in current and planned work. (CA 3A-2). CA 3A-13 is not related to Issue 16 corrective actions. CA 3A-24 is not related to Issue 16 corrective actions. Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that shipment of waste is properly executed (CA 3A-25).

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
3B. Good Characterization data for containers near X-744G does not exist and these wastes are not being managed pursuant to environmental regulations or requirements of DOE Order 435.1.	6B. Work Organization/Planning Deficiency. Currently these wastes are being managed as LLW, based on process knowledge and there is no information that any wastes fall under RCRA or Toxic Substance Control Act (TSCA) regulations. Best management practices, however, were not being followed as evidenced by the observation of EH Investigation Team that several of the B-25 boxes near the X-744G were located in standing water. Historical documentation, including request for disposals does not indicate any regulated wastes. Although RCRA/TSCA requirements may not apply to the storage of these wastes, they may be subject to radiological regulations and requirements for storage. This waste stream is included in the long-range plans and disposition maps for disposal of radioactive wastes stored at PORTS. Completion of the corrective actions is dependent upon approval of BCPs by DOE.	Corrective Action 3B-1. Develop and implement procedures for storage of LLW and scrap/surplus material in accordance with the requirements of DOE Order 435.1. Corrective Action 3B-2. Document process knowledge of waste in operating record to provide an auditable file on characterization of this waste stream. Corrective Action 3B-3. Generate estimate and submit BCP to characterize for final disposal and include in LCB. Develop and implement a sampling and analysis plan to obtain characterization data for wastes stored in containers near X-744G.	Identifying and incorporating relevant DOE Order 4 requirements into LLW and scrap/surplus storage procedures is related to CA 16A-1 in that both prom inclusion of relevant national standards in current a planned work (CA 3A-1). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operati awareness, performance monitoring, and appraisal v provide assurance that process knowledge is develo documented (CA 3B-2). Identifying and incorporating relevant sampling and analysis requirements into waste characterization procedures is related to CA 16A-1 in that both prom inclusion of relevant national standards in current a planned work.(CA 3A-3).

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
4A. A questionable technical basis exists for the Environmental Monitoring Program (EMP) and IGWMP, which stipulate requirements for the sampling, analysis, and evaluation of radiological data.	6E. Policy Not Adequately Defined, Disseminated, or Enforced. Although the M&I contract does not provide that BJC comply with all DOE directives, it does require that BJC comply with all relevant and applicable DOE directives. Specific ES&H requirements are contained in specific sets of Work Smart Standards (WSS) and Standard/Requirement Identification Documents as identified in the contract Baseline List of Required Compliance Documents. A guiding principle for the WSS process is that the approved set of standards shall be accepted by all Department Elements as the basis for the performance of work and of oversight [Reference DOE M450.3-1, Section 2.c (5)]. BJC will revise the WSS to incorporate policies, plans, and procedures that will facilitate implementation of a sound technical basis for the radiological surveillance program. BJC will issue revised EMP and IGWMP documents to DOE for approval. A work authorization will be initiated with USEC submission of environmental monitoring data to BJC and BJC will appoint an ALARA Program Manager for PORTS.	Corrective Action 4A-1. BJC will revise the WSS to incorporate requirements of DOE Orders 5400.1 and 5400.5 not specifically addressed in the WSS, consistent with site hazards and conditions. Ensure that all BJC sub-contractors are notified of this requirement to modify their environmental programs to be consistent with the revised WSS. Revised WSS will be submitted to DOE for approval. Corrective Action Plan 4A-2. BJC will develop policies, plans, and procedures that will facilitate implementation of a sound technical basis for the radiological surveillance program, in accordance with DOE Orders 5400.1 and 5400.5 and Regulatory Guide DOE/EH-0173T. Corrective Action 4A-3. Issue to DOE the revised Environmental Monitoring Program (EMP) documents, including the EMP and IGWMP, to include additional radionuclides, locations, media, and the rationale for selection and evaluation of data and add requirements equivalent to DOE 5400.1 and 5400.5 requirements. Corrective Action 4A-4. A work authorization will be initiated with USEC to provide USEC environmental monitoring data to BJC for review, trending, and incorporation into the monitoring program as required. Corrective Action 4A-5. BJC will appoint an environmental ALARA Program Manager for PORTS The ALARA Program Manager will have significant and relevant experience and qualifications in environmental health physics. The ALARA Program Manager will be responsible for preparing the Portsmouth ALARA plan and coordinating the bimonthly technical integration sessions with the appropriate managers. The ALARA Program Manager will report functionally in the BJC ES&H organization. Corrective Action 4A-6. BJC will prepare and submit an Environmental ALARA plan for PORTS and DOE PORTS Site Office for approval incorporating requirements equivalent to DOE Order 5400.5 as a best management practice.	Identifying and incorporating relevant DOE radiological requirements into WSS is an integral part of CA 16A-1. Also, implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring and appraisal will provide assurance that subcontractor environmental programs are modified.(CA 4A-1) Identifying and incorporating relevant DOE radiological requirements into the PORTS radiological surveillance program as proposed by CA 4A-2 fully supports and is an integral part of CA 16A-1 Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring and appraisal will provide assurance that EMP documents are properly modified and issued.(CA 4A-3) Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring and appraisal will provide assurance that monitoring is adequate (CA 4A-4). CA 4A-5 compliments CA 16C-4 which provides for the addition of DOE health physics staff at PORTS. Identifying and incorporating relevant equivalent requirements into an ALARA Plan is related to CA 16A-1 in that both promote the inclusion of relevant national standards in current and planned work (CA 4A-4).

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
5A. Lack of fugitive emission assessment protocol that fully evaluates and documents radiological exposure pathways to ensure credibility and technical defensibility.	6B. Work Organization/Planning Deficiency. A comprehensive evaluation and documentation of fugitive emissions and radiological exposure pathways is not evident at PORTS, as recommended by DOE/EH – 0173T. Radiological exposure pathways are being assessed at the PORTS site. The ambient air-monitoring network is being de-leased from USEC and upgraded. The pathways will be evaluated, including contributions from fugitive emissions, and the technical basis will be documented with completion of the corrective actions below. The Environmental Monitoring Plan (EMP) will be revised to include the requirements of relevant DOE Orders and air samples will be collected from air strippers at groundwater treatment facilities for analysis and monitoring of radioactive constituents.	Corrective Action 5A-1. Revise the EMP to ensure technical defensibility and include requirements equivalent to DOE Orders 5400.1 and 5400.5 and Regulatory Guide DOE/EH-0173T. Corrective Action 5A-2. Samples will be collected and evaluated at the groundwater treatment facilities that have air strippers. In the event analysis indicates any exceedances are detected, immediate mitigation action will be instituted.	Identifying and incorporating relevant DOE Order/ requirements into BMPs is related to CA 16A-1 in promote the inclusion of relevant national standard current and planned work (CA 5A-1). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operat awareness, performance monitoring and appraisal v provide assurance that monitoring and possible mit are adequate (CA 5A-2).
6A. Deficiencies exist in the management of staffing and planning in support of program requirements.	6B Work Organization/Planning Deficiency. The requirements for effective planning and implementation of a comprehensive environmental program have not been adequately stipulated or communicated to the professional environmental staff. 6D Improper Resource Allocation. Limited staff has been improperly allocated to environmental tasks for which they do not possess the necessary experience and technical expertise to ensure effective interpretation and evaluation of environmental data or programmatic requirements. 6E Policies for employees who have line management oversight responsibility for specific contract requirements for public and environmental protection have not been adequately defined, disseminated, enforced or implemented. During the original staff planning process, the complexity of the program requirements was underestimated.	Corrective Action 6A-1. BJC will evaluate available expertise against program requirements and recommend staffing levels of BJC and subcontractors to ensure that program goals can be effectively achieved, if necessary. Corrective Action 6A-2. BJC will appoint an Environmental ALARA Program Manager for PORTS. The ALARA Program Manager will have experience and qualifications in environmental health physics. The ALARA Program Manager will be responsible for preparing the Portsmouth ALARA plan and coordinating the bimonthly technical integration sessions with the appropriate managers: The ALARA Program Manager will report functionally in the BJC ES&H organization. Corrective Action 6A-3. BJC will prepare and submit an Environmental ALARA plan for PORTS to DOE PORTS Site Office for approval incorporating requirements equivalent to DOE Order 5400.5 as a best management practice.	Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operati awareness, performance monitoring, and appraisal v provide assurance that BJC and subcontractor staffi adequate (CA 6A-1). Corrective Action 6A-2 directly compliments CA 1 which involves addition of DOE health physics staf Identifying and incorporating relevant equivalent requirements into an ALARA Plan is related to CA In that both promote the inclusion of relevant nation standards in current and planned work (CA 6A-3).

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
6B. The requirements of DOE Orders 5400.1 and 5400.5 have not been included in the BJC contract.	6A. Inadequate Administrative Control. The current BJC contract ignores the requirements for procedural compliance with DOE Order 5400.1 and 5400.5 as specified in the Safety Analysis Report (SAR) for DOE-controlled nuclear facilities at PORTS. OR did not establish BJC contract standards consistent with this approved nuclear safety document. 6B. Work Organization/Planning Deficiency. The process of identifying, communicating, and implementing environmental requirements has resulted in unclear understanding of requirements by DOE and BJC, establishment of environmental program documents with incorrectly cited requirements and compliance status information, and implementation problems.	Corrective Action 6B. Revise environmental monitoring program documents, including the EMP and IGWMP, to including additional radionuclides, locations, and media and the rationale for selection and evaluation of data while ensuring addition of requirements equivalent to those contained in DOE 5400.1 and 5400.5. Corrective Action 6B-1. Revise the Work Smart Standards (WSS) to include equivalent standards for the requirements of DOE Order 5400.1 and 5400.5 consistent with site hazards and conditions. Ensure that all BJC sub-contractors are notified of this requirement to modify their environmental programs to be consistent with the revised Work Smart Standards. The revised WSS will be submitted to DOE for approval.	Identifying and incorporating relevant equivalent requirements into EMP documents is related to CA 16A-1 in that both promote the inclusion of relevant national standards in current and planned work (CA 6B-1). Revising the WSS as proposed by CA 6B-1 fully supports and is an integral part of CA 16A-1.
7A. Deficiencies in programs and implementation of ISMS elements, such as properly defining work, identifying hazards, and developing and adhering to controls, require additional DOE and BJC management attention.	6B. Work Organization/Planning Deficiency. There are program planing and implementation deficiencies in work control processes in all five core ISMS functional areas that affect worker and facility safety (see Page 28). This indicates a lack of full integration of ES&H and integrated safety management requirements into work control documents and activities. 6E. Policies Not Adequately Enforced. Procedural requirements receive little if any management at the working level to ensure proper implementation and adherence to safe working rules. In most cases, even minimal management attention to safety rule compliance would eliminate potentially unsafe conditions or work practices.	Corrective Action 7A-1. Prepare and implement Action Plans that address the cited deficiencies in each of the five ISM Core Functions identified in Table 5, Page 28, of the EH Report. Assign an STR or SA to each of the five Core Functions to ensure effective Action Plan preparation, implementation, and close-out of safety deficiencies. Corrective Action 7A-2. Review and revise subcontract specifications, as required, to require hazard assessment changes be approved by BJC prior to initiation of work with hazardous materials or in hazardous areas. Corrective Action 7A-3. Develop and implement ISMS performance criteria for use by Subcontract Technical Representatives (STRs) and Safety Advocates (SAs) in performing subcontractor ES&H evaluations. Corrective Action 7A-4. Develop and implement specific tools for conducting oversight of ISMS implementation in the field. Corrective Action 7A-5. Provide training to all STRs and SAs on available ISMS oversight tools. Corrective Action 7A-6. Provide refresher training on ISMS Program to all BJC employees and all subcontractors at PORTS.	CA 7A-1 is fully supported by CA 16D-1 and 16D-2. Reviewing and revising subcontract specifications as proposed by CA 7A-2 is fully supported by CA 16B-1 through CA 16B-6. Developing and implementing ISMS performance criteria for use by STRs is fully supported by CA 16D-1 and CA 16D-2 (CA 7A-3). Developing and implementing specific tools for conducting oversight of ISMS is fully supported by CA 16D-1 and CA 16D-2 (CA 7A-4). Training on available ISMS oversight tools and refresher training on ISMS Programs are fully supported by CA 16C-1 through CA 16C-5 (CA 7A-5 and CA 7A-6).
7B. A formal and fully effective work control process program encompassing both work practices and work control documentation has not been implemented by BJC or its field services subcontractors.	6B Work Organization/Planning Deficiency. There are program planning and implementation deficiencies in work control processes in all five core ISMS functional areas that affect worker and facility safety (see Page 28). This indicates a lack of full integration of ES&H and integrated safety management requirements into work control documents and activities.	Corrective Action 7B-1. Fully implement the requirements of procedure PO-SM-P2209, Work Control, to define and assign work based on risk for all BJC and subcontractor personnel	Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that the requirements of procedure PO-WP-2209 are fully implemented (CA 7B-2).

Area of Concern	Management Related Root Cause	Corrective Action	Linka... Issue 16
	6E Policies for employees who have line management oversight responsibility for work control standards have not be adequately defined, disseminated, enforced, or implemented. The subcontractor, which had just taken over responsibilities for work in the areas discussed in this issue, had not fully implemented all policies and procedures associated with the ISM Description Documents. The corrective actions below will address these issues.	Corrective Action 7B-2. Fully implement the requirements of procedure PO-FM-P2209, Maintenance Management, to ensure that plan-of-the-week schedules are developed and performance monitoring is conducted of all BJC and subcontractor personnel. Corrective Action 7B3. Fully implement the requirements for feedback and improvement systems as required by DOE policy 450.4, Integrated Safety Management, for Plant Services maintenance and waste operations day-to-day work activities conducted by BJC and subcontractor employees. Corrective Action 7B-4. Incorporate requirements equivalent to procedure FS-A-0001, Work Control Requirements, into the subcontract Proforma document. Corrective Action 7B-5. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on implementation of the work control process by both BJC and subcontractors. Corrective Action 7B-6. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on the implementation of the work control process. Corrective Action 7B-7. Provide training to supervisors on Work Control Process. Corrective Action 7B-8. Review and revise subcontract specifications and/or Proforma to incorporate work control requirements into subcontract where fieldwork is being performed.	Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operationa awareness, performance and monitoring, and appraisal provide assurance that requirements for feedback and improvements of systems are fully implemented (CA 7I 3). Incorporating requirements equivalent to procedure FS-0001, Work Control Requirements, into subcontract documents is fully supported by CA 16-1 (7B-4). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operationa awareness, performance monitoring, and appraisal will provide assurance that work control processes will be implemented by both BJC and subcontractors (7B-5) Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operationa awareness, performance monitoring, and appraisal will provide assurance that an annual independent assessmer will focus on the implementation of the work control process (7B-6). Implementation of the training corrective actions CA 1(through CA 16C-5 fully supports supervisor training (7 7). Reviewing and revising subcontract specifications is fu supported by CA 16A-1 (CA 7B-8).

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
8A. BJCs procedure (PQ-A-1100) describing the development, review, approval, and use of procedures does not adequately ensure quality procedure development and use of procedures by workers. Consequently, emphasis on the rigorous conduct of operations necessary for PORTS hazard category 2 nuclear facilities is below the level of vigor assumed in the PORTS Safety Analysis Report (SAR).	6A. Inadequate Administrative Control. The process for administratively controlling the use and modification of procedures failed to fully describe the SAR assumptions on procedures. In addition, BJC procedure PMMS-1001, Use of Procedures, contained more extensive guidance but was deleted and replaced by PQ-A-1100, Procedure Document Process. 6E. Policy Not Adequately Defined, Disseminated, or Enforced. BJC allowed the Plant Services, Maintenance, and Waste Operations subcontractor to begin work without an established, implemented, and maintained conduct of operations program as required by the Technical Safety Requirements (TSRs) in the SAR. The ORO ISM Verification Team previously identified this issue and procedure modification was in progress but not completed at the time of the DOE Oversight Investigation. The corrective actions below will address the issue.	Corrective Action 8A-1. Issue BJC-PQ-1102, Performance Documents, and BJC-PQ-1104, Procedure Process, to replace PQ-A-1100, Procedural Document Process. Complete company-wide Systems Integration Initiative to identify other related issues and implement systems improvement that incorporates the requirements of BJC-PQ-1102 and 1104. Corrective Action 8A-2. Update, using the Unreviewed Safety Question (USQ) process, the SAR and TSR, to reflect requirements in procedures BJC-PQ-1102, Performance Documents, and 1104, Procedure Process. Corrective Action 8A-3. Issue BJC Authorization Agreement Program procedure. (Additional detail regarding this procedure should be provided, as it is not referenced in the EH report or in this CAP). Corrective Action 8A-4. Review and revise subcontract specification and/or Proforma to incorporate flow down requirements for SAB and Authorization Agreements into applicable subcontracts. Corrective Action 8A-5. Ensure SAB adherence is incorporated, as applicable, into Subcontractor Oversight Plans, as required by PQ-A-1450, Subcontractor Oversight	Implementation of the oversight corrective actions described in 16B-1 though 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that requirements of BJC-PQ-1102, Performance Documents, and 1104, Procedure Process, are fully incorporated (CA 8A-1). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that requirements of BJC-PQ-1102, Performance Documents, and 1104, Procedure Process, are fully incorporated into the SAR and TSR (CA 8A-2) Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that the issue of BJC Authorization Agreement Program procedure (CA 8A-3). Reviewing and revising subcontract specifications is fully supported by CA 16A-1 (CA 8A-4). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that SAB adherence is incorporated, as applicable, into Subcontractor Oversight (8A-5).

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
8D. Radiological control activities are not always conducted according to established technical standards, procedures, or administrative controls.	6A. Inadequate Administrative Controls. Personnel in the Radiological Control Organization failed to use proper procedures in ensuring the procedures associated with equipment calibration were subject to the USQ Screening Process.	Corrective Action 8D-1. Issue Policy 10, Discipline and Rigor of Operations, which established expectations for the BJC employees and subcontractors to carry out their work in a formal and systematic approach that embodies a commitment to both safety and excellence in operations. Specially addressed is the adherence to procedures. This policy will be in the required reading program to be read by all BJC and subcontractor employees. Corrective Action 8D-2. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on procedure implementation of radiological control activities by both BJC and subcontractors. Corrective Action 8D-3. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on procedure implementation of radiological control activities. Corrective Action 8D-4. Review, update, and approve BJC radiological equipment calibration procedures for use by the BJC radiological control organization. Corrective Action 8D-5. Screen all equivalent procedures for USQs as required by DOE Order 5480.12 for procedures used by the radiological control organization to ensure they are consistent with the intent of 10 CFR 830.120. In cases where deficiencies are found, update, disseminate, and implement revised procedures.	Policy 10, Discipline and Rigor of Operations is full supported by CA 16D-1 and 16D-2 (8D-1). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operati awareness, performance monitoring and appraisal wi provide assurance that an assessment will be perform implementation of radiological control activities (CA 2). Implementation of the oversight corrective action described in 16B-1 through 16B-6 regarding operati awareness, performance monitoring, and appraisal w provide assurance that an annual independent assess will be performed on radiological control activities (Implementation of the oversight corrective action de in 16B-1 through 16B-6 regarding operational aware performance monitoring, and appraisal will provide assurance that BJC radiological equipment calibratio procedures are reviewed, updated, and approved (8D Implementation of the oversight corrective action de in 16B-1 through 16B-6 regarding operational aware performance monitoring, and appraisal will provide assurance that radiological control procedures are consistent with the intent of 10 CFR 830.120 (8D-5).
8E. A number of line management, health services, and training responsibilities have not been implemented in accordance with industrial hygiene procedures.	6B. Work Organization/Planning Deficiency. Tasks associated with assuming line management responsibilities in a number of industrial hygiene procedures have not been adequately stipulated or implemented.	Corrective Action 8E-1. Conduct training for personnel assigned responsibilities in the following procedures: Hazard Communications, Bloodborne Pathogens, Ergonomics, Occupational Noise Exposure, Hearing Conservation, and Workplace Sampling. Require line management to fully implement the responsibilities assigned to them in each of these industrial hygiene areas and report to ORO and BJC upon completion of the required training. Corrective Action 8E-2. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment on the implementation of the hazard Communication Program, Bloodborne Pathogens, Ergonomics, Occupational Noise Exposure, Hearing Conservation and Workplace Sampling, as applicable.	Training for personnel assigned responsibilities indu hygiene areas is fully supported by corrective action 1 through 16C-5 (CA 8E-1). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operati awareness, performance monitoring, and appraisal w provide assurance that assessments will be conducte the Hazard Communication Program, Bloodborne Pathogens, Occupational Noise Exposure, Hearing Conservation, and Workplace Sampling, as applicabl 8E-2).

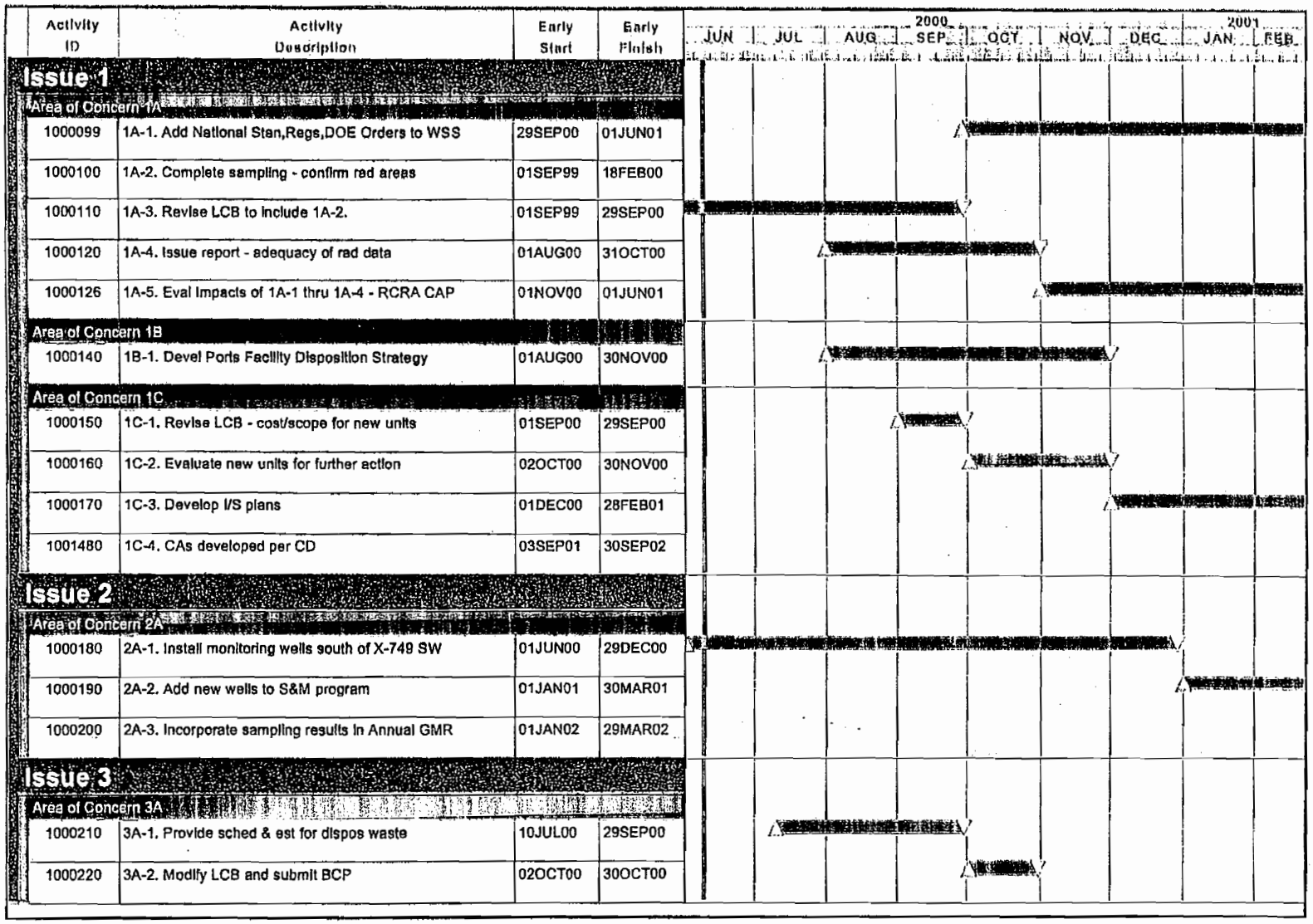
Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
9A. Lack of adherence to DOE and BJC/OR Readiness Assessment Policy and implementation of defective procedures allowed the Plant Services, Maintenance, and Waste Operations Subcontractor to assume operation of Hazard Category 2 nuclear facilities prior to ensuring line management readiness for safe nuclear operations.	6A Inadequate Administrative Control. Effective administrative controls, properly implemented, would have prevented the development of procedures that omitted the requirements pertaining to readiness assessments for Category 2 nuclear facilities. 6B Work Organization/Planning Deficiency. All work associated with the planning, scoping, assignment, and scheduling of work regarding the conduct of the required readiness assessments prior the subcontractor assuming control of operations should have been conducted as a line management responsibility in accordance with BJC-OR-146, DOE Order 425.1A (Startup and Restart of Nuclear Facilities), and DOE-STD-3006-95 (Planning and Conduct of Operational Readiness Reviews). 6E Policy Not Adequately Defined. The policy for the conduct of readiness assessments prior to facility turn-over for operations, especially in the case of Category 2 nuclear facilities, is not properly defined, is confusing, and leads to situations which allow subcontractors to assume operational responsibilities for nuclear facilities without ensuring line management readiness for safe nuclear operations.	Corrective Action 9A-1. Immediately begin the process of revising PQ-A-1510, Readiness Evaluations, to include requirements for effective readiness evaluations prior to operational transition of any Category 2 facility. Upon completion, implement the requirements of the revised PQ-A-1510 procedure for all facilities requiring readiness evaluations. Corrective Action 9A-2. Conduct a Readiness Evaluation of all Hazard Category 2 nuclear facilities under the control of DOE and BJC that have been operationally transferred to WASTREN in accordance with the procedures contained in BJC/OR-146, DOE Order 425.1A, DOE-STD-3006-95, and Procedure PQ-A-1510, Readiness Reviews.	Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that effective readiness evaluations will be performed prior to operational transition of any Category 2 facility (CA 9A-1). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that readiness evaluations will be conducted on all Hazard Category 2 nuclear facilities operationally transferred to WASTREN (CA 9A-2).

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
10A. Facility-specific isotopic or radiological contamination characterization and analysis has not been conducted nor has the data from previous efforts been incorporated into a single current program document.	6B, Work Organization/Planning Deficiency and 6D, Improper Resource Allocation. Lack of management planning and priority in the area of radiological control hazard assessment has impacted the sites ability to generate facility-specific isotopic data. Interviews with radiological control management revealed that determinations of need for this data and requests for funds were carried out over a three-year period; however, BJC and their predecessor did not assign an appropriate priority to this request, nor did DOE approve these requests.	Corrective Action 10A-1, Phase 1: Update maps of all areas for which BJC is responsible to delineate all of those outdoor areas and buildings or other structures that have radiological postings or unposted areas with known radiological contamination above specified background levels. Corrective Action 10A-2. Phase 2: Use existing data to determine the radionuclides and lung solubility class expected to be present in each posted area. Both radionuclides identity and lung solubility class information is required to accurately characterize the hazard. This data will be presented on maps and supported by a documented evidence file containing the reference data and reports. BJC will also identify those areas where there is insufficient data in order to determine the identity of the radionuclides and/or the lung solubility class. Corrective Action 10A-3. Phase 3: Prepare and implement a sampling plan and schedule to be used to obtain the additional data identified in Phase 2. Rationale for the sample program and schedule will be included. Following completion of sampling and analysis, the results of Phase 3 will be used to update the radionuclide hazard maps. Corrective Action 10A-4. Prepare and disseminate a report that includes all validated data from previous efforts to radiologically characterize the site.	Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatic awareness, performance monitoring, and appraisal w provide assurance that maps with radiological data w updated (10A-1). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatic awareness, performance monitoring, and appraisal wi provide assurance that radionuclides and lung solubil class information will be identified (10A-2). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatio awareness, performance monitoring, and appraisal wi provide assurance that sampling plan and schedule w prepared for Phase 2 data (10A-3). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatio awareness, performance monitoring, and appraisal wi provide assurance that report on radiological characterization data will be prepared and documente (10A-4). Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatio awareness, performance monitoring, and appraisal w provide assurance that the technical basis for establis radiological controls will be updated (10B-1).
10B. The radiological protection program relies on process knowledge and limited waste isotopic data to establish radiological controls, rather than a documented technical basis. This is a programmatic weakness in the radiological protection program that needs to be Addressed by radiological control management in the form of a documented technical bases relying upon complete, validated radiological data.	6B Work Organization/Planning Deficiency. The work of radiological control management should focus on the development and establishment of a documented technical bases for the radiological control program. Data from previous characterization efforts, combined with validated isotopic characterization data for all facilities, should form the technical bases from which radiological controls are then instituted.	Corrective Action 10B-1. On the basis of facility-specific isotopic data, update the technical basis for establishing radiological controls. Corrective Action 10B-2. Issue Policy 10, Discipline and Rigor of Operations which establishes expectations for the BJC employees and subcontractors to carry out their work in a formal and systematic approach that embodies a commitment to both safety and excellence in operations. Specially addressed is the adherence to procedures. This policy will be in the required reading program to be read by all BJC and subcontractor employees.	Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operatio awareness, performance monitoring and appraisal wil provide assurance that Policy 10, Discipline and Rigo Operations will be implemented (10B-2).

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
11C. The use of Thermoluminescent Dosimeters (TLDs) is inconsistent with DOE requirements.	6A. Inadequate Administrative Controls. BJC does not strictly enforce the requirements that only dosimeters accredited by the DOE Laboratory Accreditation Program should be used on BJC-Managed sites.	Corrective Action 11C-1. BJC has prepared an exemption request from 10 CFR 835 that proposes that the USEC employees and subcontractors are permitted to use NAVLAP dosimeters when DOE services are performed by USEC employees and subcontractors. Corrective Action 11C-2. If the request for an exemption from the requirements of 10 CFR 835 is not granted, BJC will notify DOE and propose alternative measures for complying with the requirements of 10 CFR 835.	CA 11C-1 is not related to Issue 16 corrective actions. CA 11C-2 is not related to Issue 16 corrective actions.
13A. Work requests failed to identify and document all hazards for some work activities.	6E. Policy Not Adequately Defined, Disseminated, or Enforced. There were numerous deficiencies in the planning of work that lacked appropriate identification of all hazards in all work packages by supervisory personnel. Corrective actions include the review and revision of subcontractor specifications for hazard assessments and training in the identification.	Corrective Action 13A-1. Review and revise subcontract specifications, as required, to require hazard assessments and changes approved by BJC. Corrective Action 13A-2. Incorporate requirements of equivalent to procedure FS-A-0001, Work Control Requirements, into the subcontract Proforma document. Corrective Action 13A-3. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on implementation of the work control process by both BJC and subcontractors. Corrective Action 13A-4. P/QA will revise the Independent Assessment Schedule for FY 2000 (and subsequent years) to implement an annual independent assessment that focuses on the implementation of the work control process.	Implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal will provide assurance that requirements are passed through to subcontractors.(CA 13A-1) Identifying and incorporating relevant equivalent requirements into this requirements procedure is related to CA 16A-1 in that both promote the inclusion of relevant national standards in current and planned work (CA 13A-1). CA 13A-3 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal. CA 13A-4 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal.
14B. WASTREN is not compliant with all requirements of Exhibit G or their respective safety programs and key elements of some safety programs have not been developed at the subcontractor level.	6C. Inadequate Supervision. There was inadequate techniques used to direct the subcontractor and oversee the daily accomplishment of tasks, which resulted in some contractual deficiencies. 6A. Inadequate Administrative Control. The DOE/BJC WSS process did not incorporate the requirements of DOE Order 440.1A pertaining to A-5 Occupational Medicine.	Corrective Action 14B-1. Notify WASTREN, in writing, of contractual requirements that are deficient. Corrective Action 14B-2. Implement the WASTREN Subcontractor Oversight Plan developed pursuant to BJC Procedure PQ-A-1450, Subcontractor Oversight. Corrective Action 14B-3. Direct WASTREN to modify their ES&H Plan to include all site-specific provisions for emergency response and submit it to BJC for review.	CA 14B-1 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring and appraisal. CA 14B-2 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring and appraisal.

Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
15A. The requirements of DOE Order 440.1A, Worker Protection Management, Chapter 19, Occupational Medicine or equivalent requirements have not been integrated into the DOE/BJC WSS process.		Corrective Action 15A-1. DOE Order 440.1A, Chapter 19, Occupational Medicine, has been included in the BJC WSS. Corrective Action 15A-2. BJC will prepare an interface protocol and will hold a quarterly interface meeting between the SOMC medical director, BJC industrial, safety, and health physics to discuss ongoing and planned work activities and to identify the chemical, biological, radiological and physical hazards associated with the work. Corrective Action 15A-3. BJC will audit the subcontractor medical certification. This audit will be conducted annually by the end of each June company wide for selected subcontractors.	Identifying and incorporating site-specific provisions on national standards is related to CA 16A-1 in that b promotes the inclusion of relevant national standards current and planned work. (CA 14B-3) Identifying and incorporating relevant DOE occupatio medicine requirements into WSS as proposed by CA fully supports and is an integral part of CA 16A-1. CA 15A-2 compliments the implementation of the oversight corrective actions described in 16B-1 throug 16B-6 regarding operational awareness, performance monitoring and appraisal. CA 15A-3 compliments the implementation of the oversight corrective actions described in 16B-1 throug 16B-6 regarding operational awareness, performance monitoring and appraisal.
15B. Clearly defined roles and responsibilities for BJC and WASTREN Line Management, ES&H personnel, and Emergency Management to provide information to the medical provider concerning hazards and health effects that could impact workers have not been established in site specific documents.	6B. Work Organization/Planning Deficiency. The occupational health requirements of DOE Orders 440.1A and 450.4 were not clearly communicated through the plan of safety and health policies and procedures.	Corrective Action 15B-1. BJC will prepare an interface protocol, in accordance with DOE Orders 440.1A and 450.4, and will hold a quarterly interface meeting between the SOMC medical director, BJC industrial hygiene, safety and health physics personnel to discuss ongoing and planned work activities and to identify the chemical, biological, radiological, and physical associated with the work. Corrective Action 15B-2. BJC will audit the subcontractor medical certification. This audit will be conducted annually by the end of each June company wide for selected subcontractors.	CA 15B-1 compliments the implementation of the oversight corrective actions described in 16B-1 throug 16B-6 regarding operational awareness, performance monitoring and appraisal. CA 15B-2 compliments the implementation of the oversight corrective actions described in 16B-1 throug 16B-6 regarding operational awareness, performance monitoring and appraisal

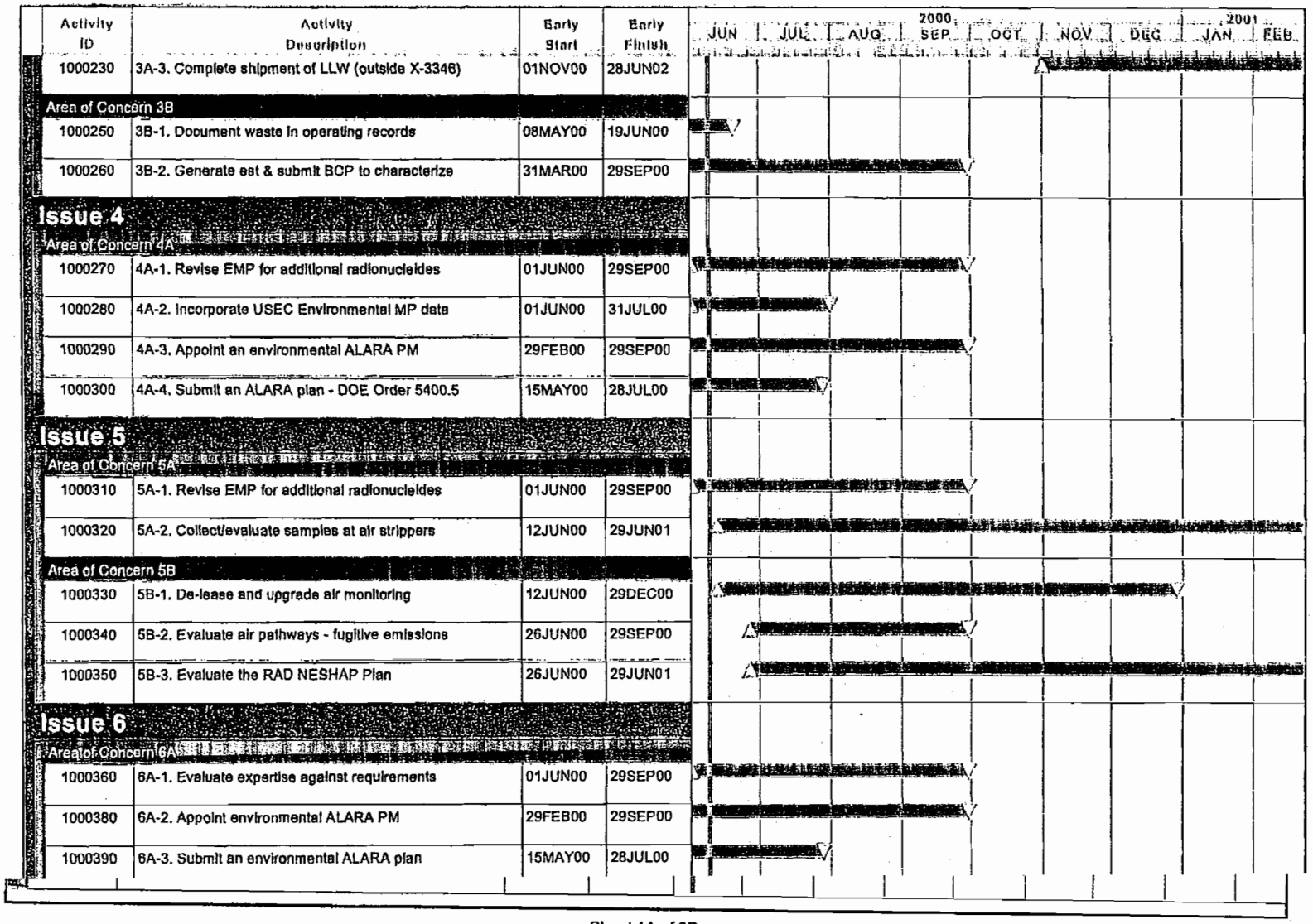
Area of Concern	Management Related Root Cause	Corrective Action	Linkage to Issue 16
17A. The BJC subcontractor formation teams and procurement process do not always incorporate current and consistent requirements into subcontracts, and BJC Subcontractor Technical Representatives do not always ensure that applicable subcontractor requirements are consistently delineated in subcontractor submissions.	6A. Inadequate Administrative Control. There was a lack of integration of all contractual documents required to direct subcontractors in the accomplishment of tasks.	Corrective Action 17A-1. Complete company-wide Systems Integration Initiative to fully identify prime contract requirements and properly flow down requirements in company documents and subcontract Proforma. Corrective Action 17A-2. The Vice President and General Manager of BJC issued a Directive in January 2000 that all BJC Managers of Projects sign verification for all subcontractor ES&H procedure packages under their respective purview that the process has been followed. The verifications by the Managers of Projects will commence on February 1, 2000. Corrective Action 17A-3. Issued company-wide procedure PQ-A-1450, Subcontractor Oversight that defines the overall process, identifies roles and responsibilities of BJC personnel who perform oversight, and outlines a graded approach to oversight based on the hazards of the subcontractor activities. The procedure complements the BJC ISM Program, which focuses on identifying requirements up front. Complete subcontractor oversight plans.	CA 17A-1 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring and appraisal. CA 17A-2 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring and appraisal. CA 17A-3 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring and appraisal. This CA also compliments CA 16D-1 and 16D-2 regarding the PORTS ISM system.
17C. There are many program and implementation weaknesses in BJC's operational awareness and appraisal programs.	6C. Inadequate Supervision. There were inadequate techniques used to direct the subcontractor and oversee the daily accomplishment of tasks, which resulted in some contractual deficiencies.	Corrective Action 17C-1. Notify WASTREN, in writing, of contractual requirements that are deficient. Corrective Action 17C-2. Implement the WASTREN Subcontractor Oversight Plan developed pursuant to BJC Procedure PQA-A-1450, Subcontractor Oversight. Corrective Action 17C-3. The subcontractor will modify their ES&H Plan to include all site-specific provisions for emergency response and submit it to BJC for review.	CA 17C-1 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal. CA 17C-2 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal. Identifying and incorporating site-specific provisions based on national standards is related to CA 16A-1 in that both promotes the inclusion of relevant national standards in current and planned work (CA 14B-3).
17D. BJC has not established a system at PORTS to evaluate the ES&H and skills training received by its principal subcontractors	6A. Inadequate Administrative Control. This is a condition that can be traced to a lack of a system to evaluate the ES&H and skill training received by subcontractors.	Corrective Action 17D-1. Revise FY 2000 (and subsequent years) Management Assessment Schedule to include an assessment that focuses on the adequacy of subcontractor training for their respective projects. Corrective Action 17D-2. The BJC Training Manager will issue an annual report summary and trending results of training management assessments.	CA 17D-1 compliments the implementation of the oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance Monitoring, and appraisal. This CA also compliments CA 16C-1 through 16C-3 regarding PORTS staff training and qualifications. CA 17D-2 compliments the implementation of the Oversight corrective actions described in 16B-1 through 16B-6 regarding operational awareness, performance monitoring, and appraisal.



Activity ID	Activity Description	Early Start	Early Finish
Issue 1			
Area of Concern 1A			
1000099	1A-1. Add National Stan,Regs,DOE Orders to WSS	29SEP00	01JUN01
1000100	1A-2. Complete sampling - confirm rad areas	01SEP99	18FEB00
1000110	1A-3. Revise LCB to include 1A-2.	01SEP99	29SEP00
1000120	1A-4. Issue report - adequacy of rad data	01AUG00	31OCT00
1000126	1A-5. Eval Impacts of 1A-1 thru 1A-4 - RCRA CAP	01NOV00	01JUN01
Area of Concern 1B			
1000140	1B-1. Devel Ports Facility Disposition Strategy	01AUG00	30NOV00
Area of Concern 1C			
1000150	1C-1. Revise LCB - cost/scope for new units	01SEP00	29SEP00
1000160	1C-2. Evaluate new units for further action	02OCT00	30NOV00
1000170	1C-3. Develop I/S plans	01DEC00	28FEB01
1001480	1C-4. CAs developed per CD	03SEP01	30SEP02
Issue 2			
Area of Concern 2A			
1000180	2A-1. Install monitoring wells south of X-749 SW	01JUN00	29DEC00
1000190	2A-2. Add new wells to S&M program	01JAN01	30MAR01
1000200	2A-3. Incorporate sampling results in Annual GMR	01JAN02	29MAR02
Issue 3			
Area of Concern 3A			
1000210	3A-1. Provide sched & est for dispos waste	10JUL00	29SEP00
1000220	3A-2. Modify LCB and submit BCP	02OCT00	30OCT00

Sheet 1A of 9B

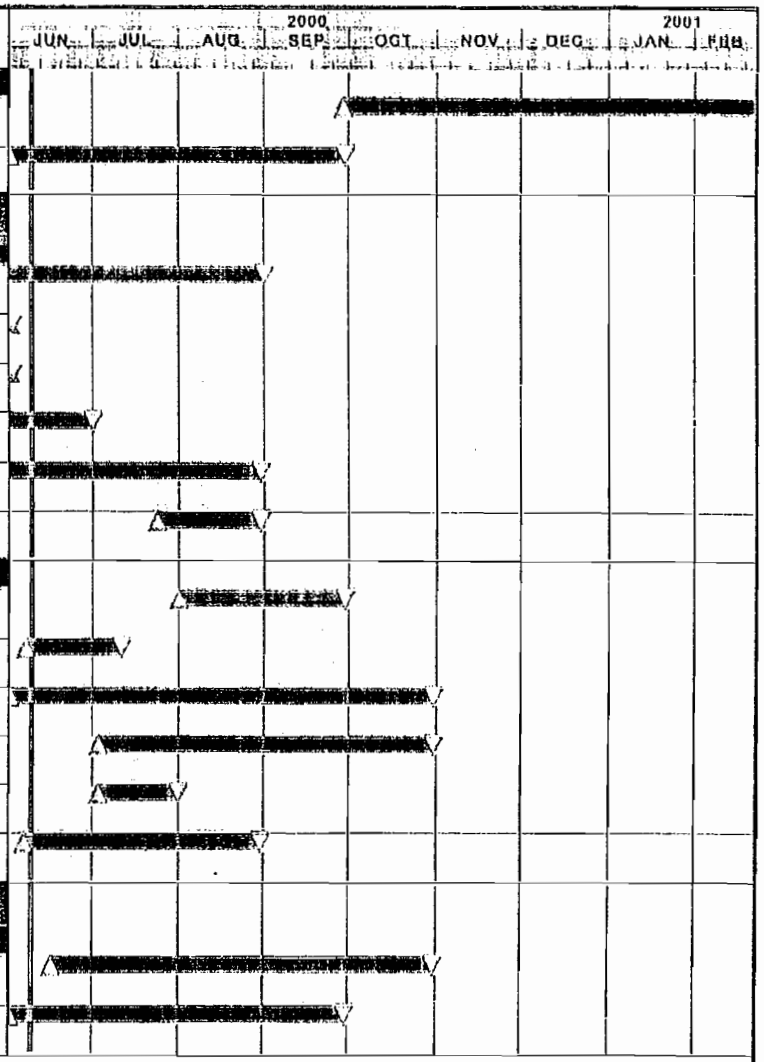
Figure 1. BJC Corrective Action Plan Schedule



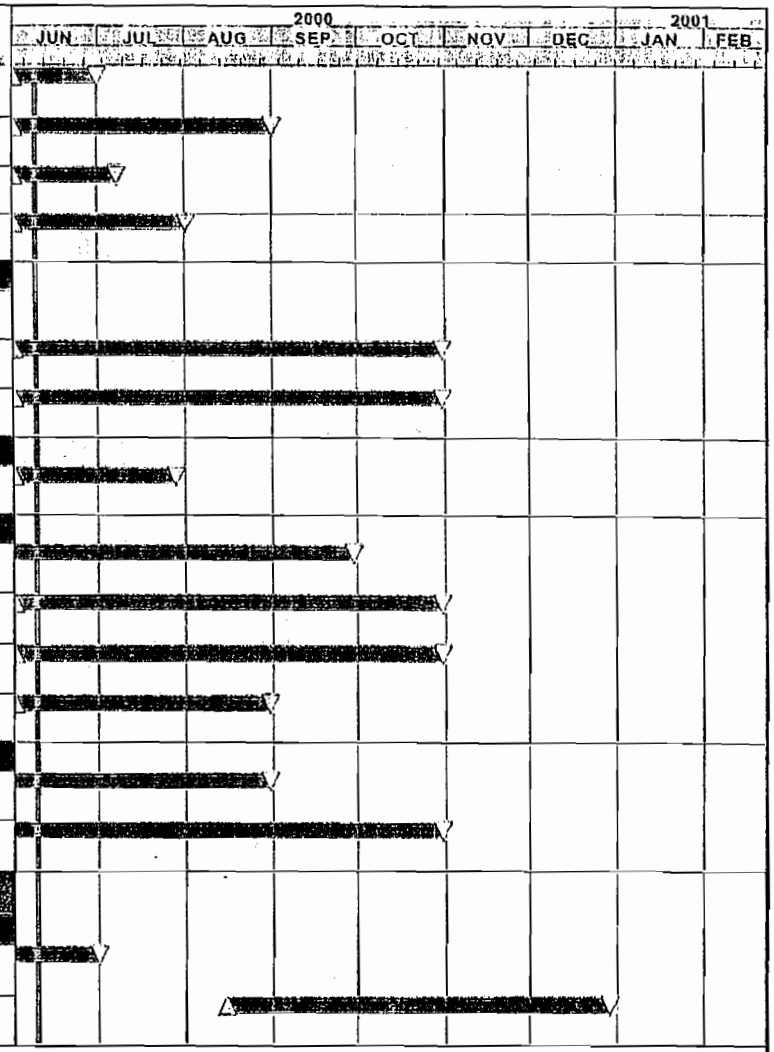
Activity ID	Activity Description	Early Start	Early Finish
1000230	3A-3. Complete shipment of LLW (outside X-3346)	01NOV00	28JUN02
	Area of Concern 3B		
1000250	3B-1. Document waste in operating records	08MAY00	19JUN00
1000260	3B-2. Generate est & submit BCP to characterize	31MAR00	29SEP00
	Issue 4		
	Area of Concern 4A		
1000270	4A-1. Revise EMP for additional radionuclelides	01JUN00	29SEP00
1000280	4A-2. Incorporate USEC Environmental MP data	01JUN00	31JUL00
1000290	4A-3. Appoint an environmental ALARA PM	29FEB00	29SEP00
1000300	4A-4. Submit an ALARA plan - DOE Order 5400.5	15MAY00	28JUL00
	Issue 5		
	Area of Concern 5A		
1000310	5A-1. Revise EMP for additional radionuclelides	01JUN00	29SEP00
1000320	5A-2. Collect/evaluate samples at air strippers	12JUN00	29JUN01
	Area of Concern 5B		
1000330	5B-1. De-lease and upgrade air monitoring	12JUN00	29DEC00
1000340	5B-2. Evaluate air pathways - fugitive emissions	26JUN00	29SEP00
1000350	5B-3. Evaluate the RAD NESHAP Plan	26JUN00	29JUN01
	Issue 6		
	Area of Concern 6A		
1000360	6A-1. Evaluate expertise against requirements	01JUN00	29SEP00
1000380	6A-2. Appoint environmental ALARA PM	29FEB00	29SEP00
1000390	6A-3. Submit an environmental ALARA plan	15MAY00	28JUL00

Sheet 1A of 9B

Activity ID	Activity Description	Early Start	Early Finish
Area of Concern 6B			
1000399	6B-1. Add Nat Stan, Regs, DOE Orders to WSS	29SEP00	01JUN01
1000400	6B-2. Revise EMP for additional radionuclelides	01JUN00	29SEP00
Issue 7			
Area of Concern 7A			
1000410	7A-1. Subcontract specs - BJC approval of HA	23FEB00	31AUG00
1000420	7A-2. ISMS perf. criteria for STRs and SA	01JUN00	01JUN00
1000430	7A-3. Develop tools for ISMS oversight	01JUN00	01JUN00
1000440	7A-4. Communicate info. on ISMS oversight tools	23FEB00	30JUN00
1000450	7A-5. Analyze feedback - oversight activities	23FEB00	30AUG00
1001470	7A-6. ISMS training for all PORTS employees.	24JUL00	30AUG00
Area of Concern 7B			
1000459	7B-1. DOE Policy 450.4 for plant svcs/waste ops	01AUG00	29SEP00
1000460	7B-2. FS-A-0001 into subcontract Proforma doc.	07JUN00	10JUL00
1000470	7B-3. MA Sched - work control process	01JUN00	30OCT00
1000480	7B-4. IA Sched - work ctrl processes, annual	03JUL00	30OCT00
1001449	7B-5. Train supervisors - Work Control Process	03JUL00	31JUL00
1001450	7B-6. Revise subc. specs for work control	06JUN00	30AUG00
Issue 8			
Area of Concern 8A			
1000490	8A-1. Sys Integration Init. - PQ-A-1102 & -1104	16JUN00	30OCT00
1000500	8A-2. Update SAR & TSR - PQ-A-1102 & -1104	01JUN00	29SEP00



Activity ID	Activity Description	Early Start	Early Finish
1001410	8A-3. BJC Auth. Agreement Prog. procedure.	01JUN00	30JUN00
1001420	8A-4. Revise subc. specs for SAB	01JUN00	31AUG00
1001430	8A-5. Ensure SAB adherence is incorporated	01JUN00	07JUL00
1001440	8A-6. DE-A-1102 - SAB documentation.	01JUN00	01AUG00
Area of Concern 8B			
1000510	8B-1. Wastren - Doc. Change Ctrl. training	15MAR00	04APR00
1000515	8B-2. MA Sched - Procedure Imp., monthly	01JUN00	30OCT00
1000520	8B-3. IA Sched - Procedure Imp., annual	01JUN00	30OCT00
Area of Concern 8C			
1000530	8C-1. Wastren - revise PO-SM-P2209- SOMAX	01JUN00	28JUL00
Area of Concern 8D			
1000540	8D-1. Issue Policy 10	20MAR00	29SEP00
1000550	8D-2. MA Sched - rad. ctrl.	01JUN00	30OCT00
1000560	8D-3. IA Sched - rad. ctrl., annual	01JUN00	30OCT00
1000561	8D-4. Screen/revise proced - 10 CFR 830.120	01JUN00	30AUG00
Area of Concern 8E			
1000570	8E-1. Train personnel, Hazard Comm, etc	01MAY00	30AUG00
1000580	8E-2. MA Sched - Haz. Comm., annual	01MAY00	30OCT00
Issue 9			
Area of Concern 9A			
1000600	9A-1. Review & revise PQ-A-1510	19APR00	30JUN00
10000601	9A-2. Readiness Eval - Haz Cat 2 Nucl Facil	15AUG00	29DEC00



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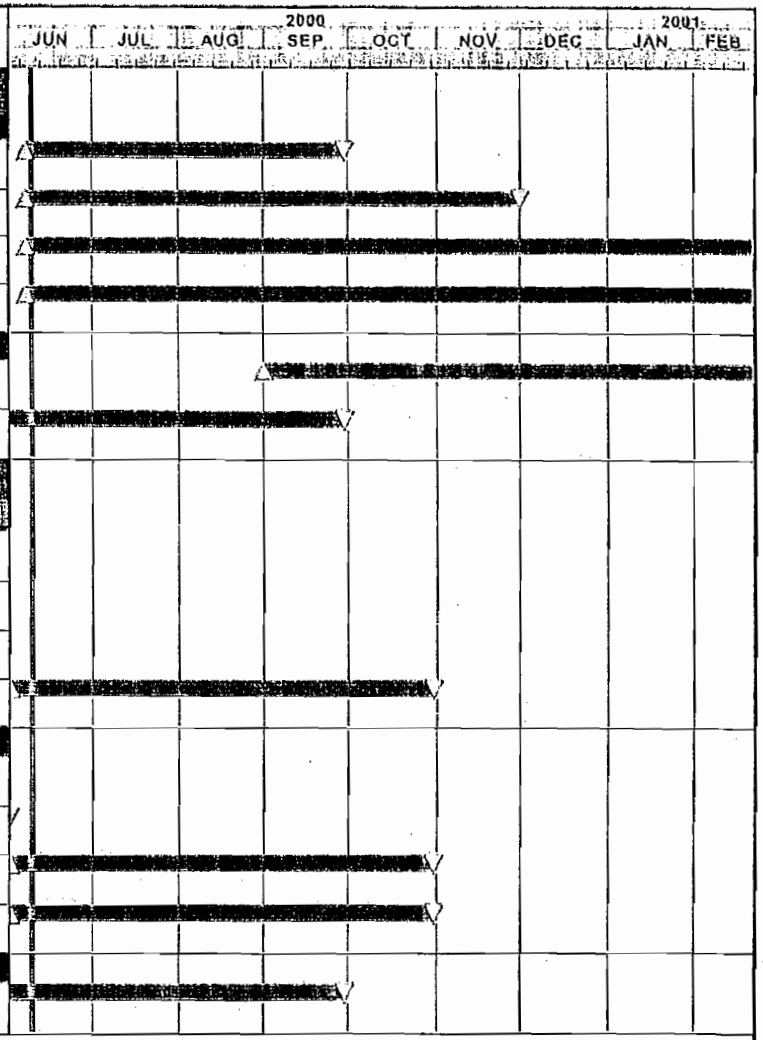
Activity ID	Activity Description	Early Start	Early Finish
Issue 10			
Area of Concern 10A			
1000650	10A-1. Update radiological maps	07JUN00	29SEP00
1000660	10A-2. Determine rad & lung solubility class	07JUN00	30NOV00
1000670	10A-3. Develop schedule for 10A-2	07JUN00	29JUN01
1000671	10A-4. Dissem maps, data, & req'd reading	07JUN00	29JUN01
Area of Concern 10B			
1000680	10B-1. Update technical basis for rad controls	01SEP00	30JUL01
1000682	10B-2. Issue Policy 10	20MAR00	29SEP00
Issue 11			
Area of Concern 11A			
1000690	11A-1. Revise procedure SH-A-4030	31JAN00	15MAR00
1000700	11A-2. Increase professional level staffing	31JAN00	15MAY00
1000710	11A-3. Enhanced training for SEC RadCon	03APR00	13APR00
1000720	11A-4. I/A sched - RadCon, annual	01JUN00	30OCT00
Area of Concern 11B			
1000750	11B-1. Train on the requirements of SH-B-4011	03APR00	27APR00
1000760	11B-2. Modify survey forms - data less than Lc	03APR00	31MAY00
1001240	11B-3. MA Sched - RAD surveys	01JUN00	30OCT00
1001250	11B-4. IA Sched. - RAD surveys, annual	01JUN00	30OCT00
Area of Concern 11C			
1000770	11C-1. Exemption for 10 CFR 835 - NAVLAPs	06APR00	29SEP00



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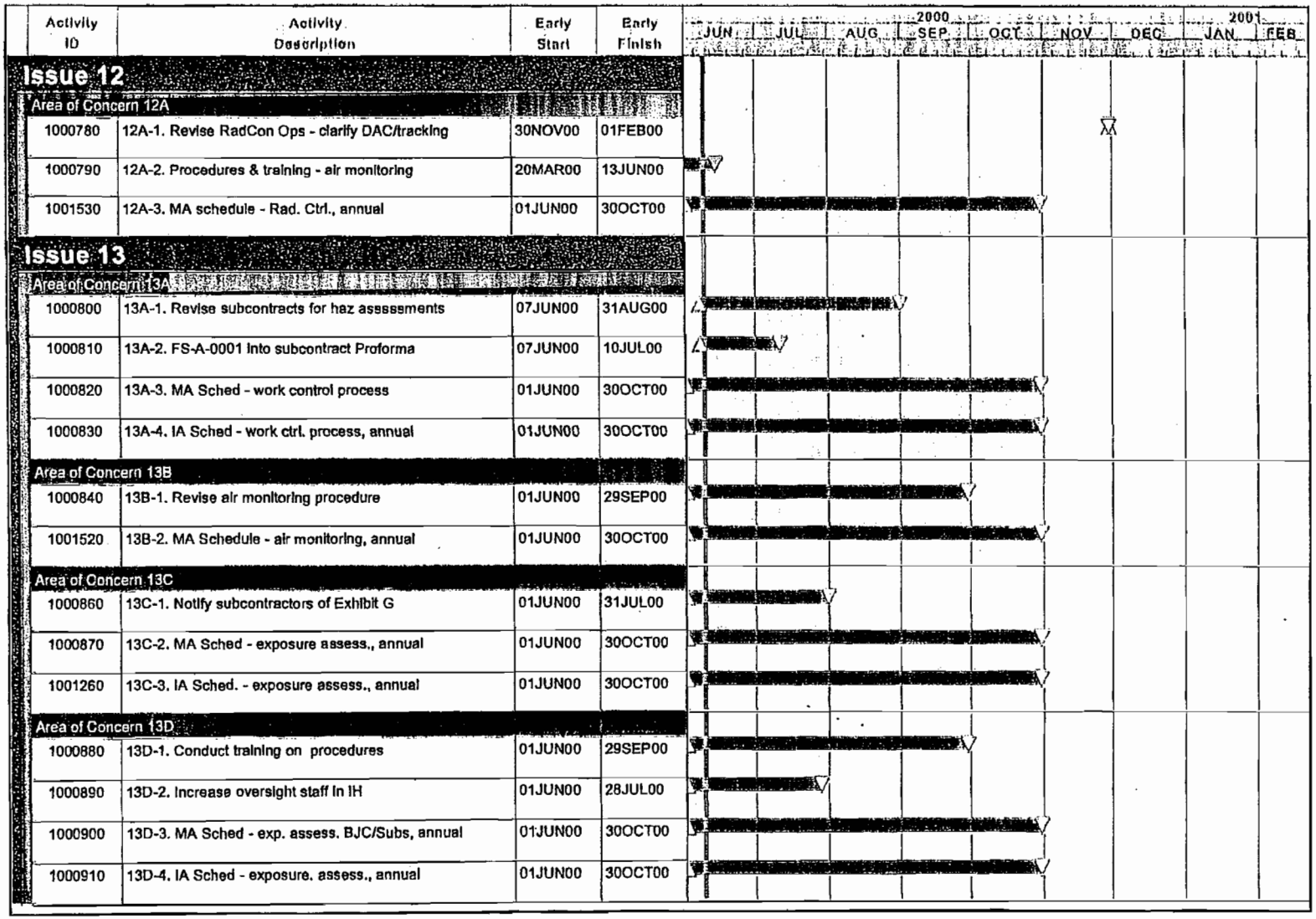

Activity ID	Activity Description	Early Start	Early Finish
Issue 12			
Area of Concern 12A			
1000780	12A-1. Revise RadCon Ops - clarify DAC/tracking	30NOV00	01FEB00
1000790	12A-2. Procedures & training - air monitoring	20MAR00	13JUN00
1001530	12A-3. MA schedule - Rad. Ctrl., annual	01JUN00	30OCT00
Issue 13			
Area of Concern 13A			
1000800	13A-1. Revise subcontracts for haz assssments	07JUN00	31AUG00
1000810	13A-2. FS-A-0001 into subcontract Proforma	07JUN00	10JUL00
1000820	13A-3. MA Sched - work control process	01JUN00	30OCT00
1000830	13A-4. IA Sched - work ctrl. process, annual	01JUN00	30OCT00
Area of Concern 13B			
1000840	13B-1. Revise air monitoring procedure	01JUN00	29SEP00
1001520	13B-2. MA Schedule - air monitoring, annual	01JUN00	30OCT00
Area of Concern 13C			
1000860	13C-1. Notify subcontractors of Exhibit G	01JUN00	31JUL00
1000870	13C-2. MA Sched - exposure assess., annual	01JUN00	30OCT00
1001260	13C-3. IA Sched. - exposure assess., annual	01JUN00	30OCT00
Area of Concern 13D			
1000880	13D-1. Conduct training on procedures	01JUN00	29SEP00
1000890	13D-2. Increase oversight staff in IH	01JUN00	28JUL00
1000900	13D-3. MA Sched - exp. assess. BJC/Subs, annual	01JUN00	30OCT00
1000910	13D-4. IA Sched - exposure. assess., annual	01JUN00	30OCT00

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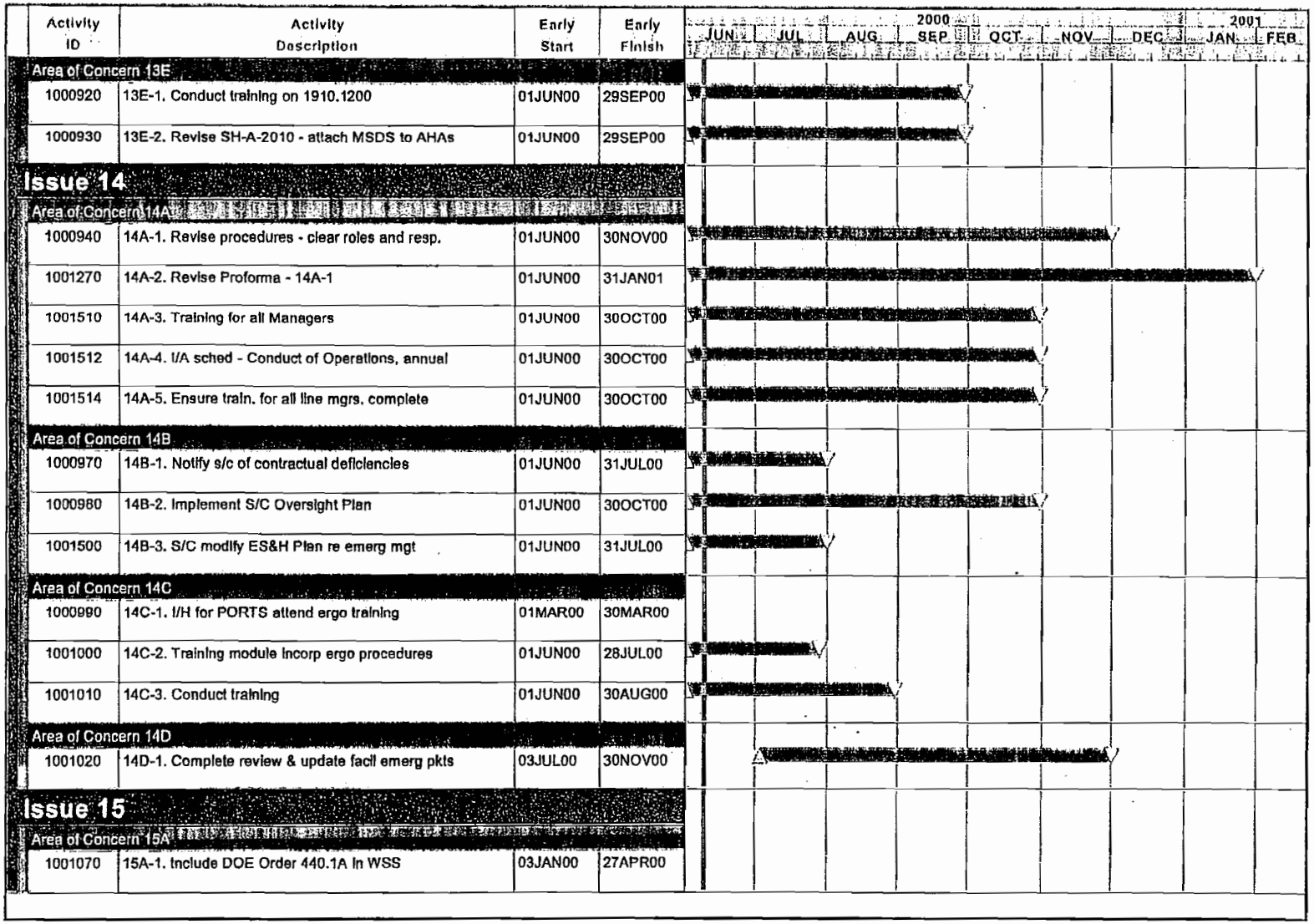

Activity ID	Activity Description	Early Start	Early Finish
Area of Concern 13E			
1000920	13E-1. Conduct training on 1910.1200	01JUN00	29SEP00
1000930	13E-2. Revise SH-A-2010 - attach MSDS to AHAs	01JUN00	29SEP00
Issue 14			
Area of Concern 14A			
1000940	14A-1. Revise procedures - clear roles and resp.	01JUN00	30NOV00
1001270	14A-2. Revise Proforma - 14A-1	01JUN00	31JAN01
1001510	14A-3. Training for all Managers	01JUN00	30OCT00
1001512	14A-4. I/A sched - Conduct of Operations, annual	01JUN00	30OCT00
1001514	14A-5. Ensure train. for all line mgrs. complete	01JUN00	30OCT00
Area of Concern 14B			
1000970	14B-1. Notify s/c of contractual deficiencies	01JUN00	31JUL00
1000980	14B-2. Implement S/C Oversight Plan	01JUN00	30OCT00
1001500	14B-3. S/C modify ES&H Plan re emerg mgt	01JUN00	31JUL00
Area of Concern 14C			
1000990	14C-1. I/H for PORTS attend ergo training	01MAR00	30MAR00
1001000	14C-2. Training module incorp ergo procedures	01JUN00	28JUL00
1001010	14C-3. Conduct training	01JUN00	30AUG00
Area of Concern 14D			
1001020	14D-1. Complete review & update facil emerg pkts	03JUL00	30NOV00
Issue 15			
Area of Concern 15A			
1001070	15A-1. Include DOE Order 440.1A in WSS	03JAN00	27APR00

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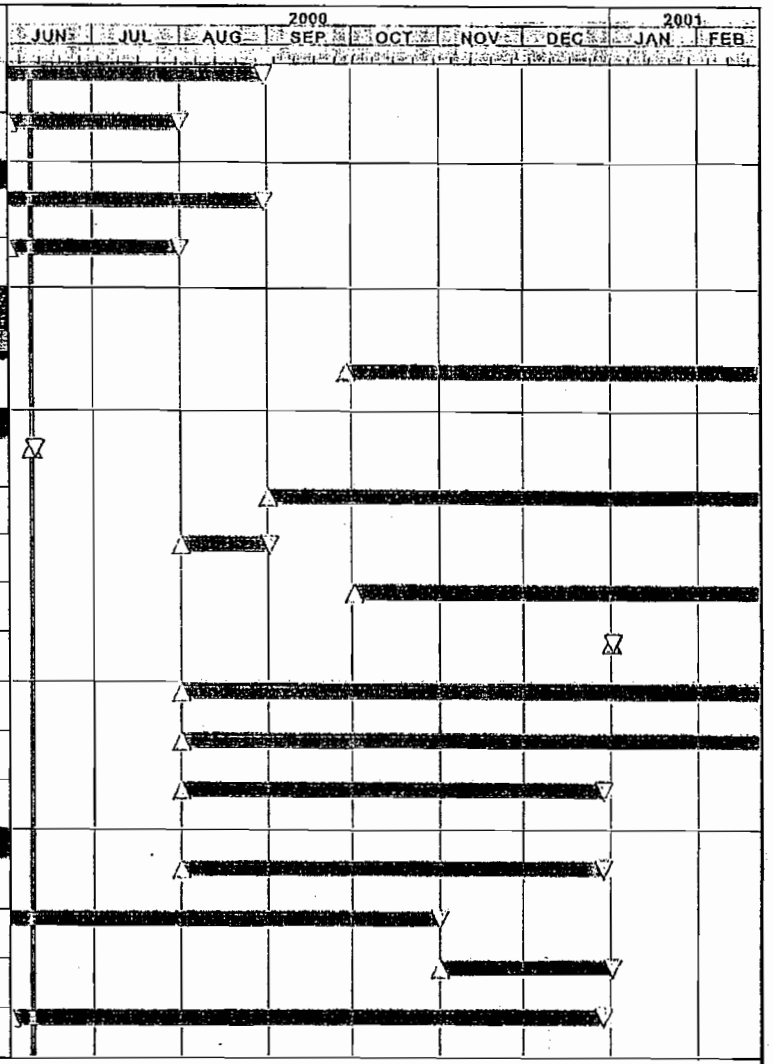
Activity ID	Activity Description	Early Start	Early Finish
1001072	15A-2. Prepare interface protocol & hold meeting	01MAY00	30AUG00
1001074	15A-3. BJC audit SOMC's medical certification	01JUN00	31JUL00
Area of Concern 15B			
1001080	15B-1. Prep. Interface protocol - quarterly mtg.	01MAY00	30AUG00
1001090	15B-2. Annual audit - contractor med certs	01JUN00	31JUL00
Issue 16			
Area of Concern 16A			
1001069	16A-1. Add Nat Standards,Regs,DOE Orders to WSS	29SEP00	29JUN01
Area of Concern 16B			
1002069	16B-1. Revise PORTS-SA-501 & provide training	09JUN00	09JUN00
1002070	16B-2. Implement line management oversight	01SEP00	02APR01
1002071	16B-3. Implement independent ES&H oversight	01AUG00	01SEP00
1002072	16B-4. DOE HQ qtrly IPP reviews at Ports	02OCT00	28SEP01
1002073	16B-5. Train staff re PM & monitoring of M&I	01JAN01	01JAN01
1002074	16B-6. Develop routing - documents/personnel	01AUG00	28SEP01
1002075	16B-7. DOE review Lease & inventory lists	01AUG00	30MAR01
1002076	16B-8. NCS review of DOE retained equipment	01AUG00	29DEC00
Area of Concern 16C			
1003069	16C-1. Modify staff IDPs - S&H training	01AUG00	29DEC00
1003070	16C-2. Training matrix & revised IDPs	03JAN00	31OCT00
1003071	16C-3. Mo training schedule - area of expertise	01NOV00	01JAN01
1003072	16C-4. DOE facility rep & H/P position	01JUN00	29DEC00



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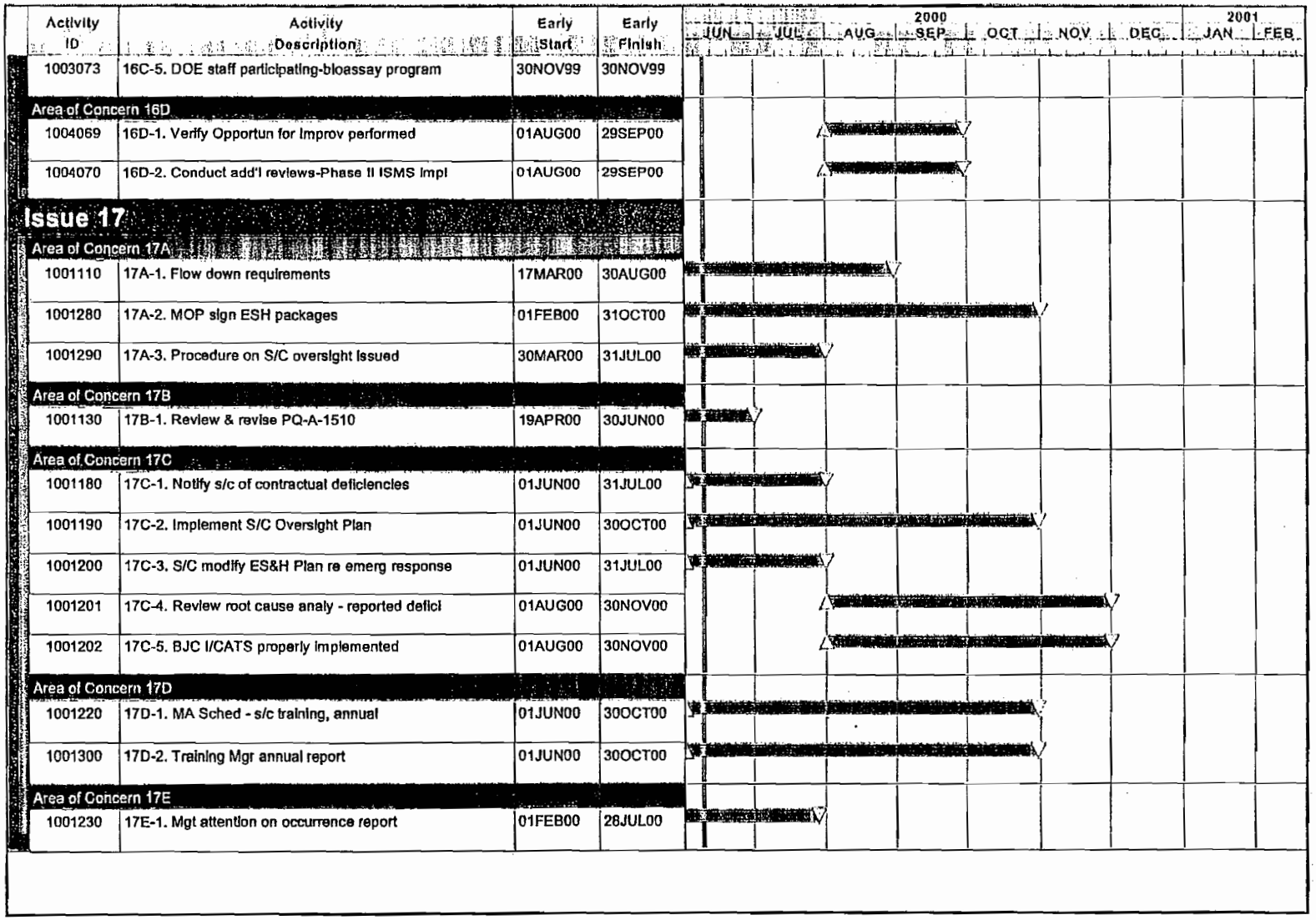
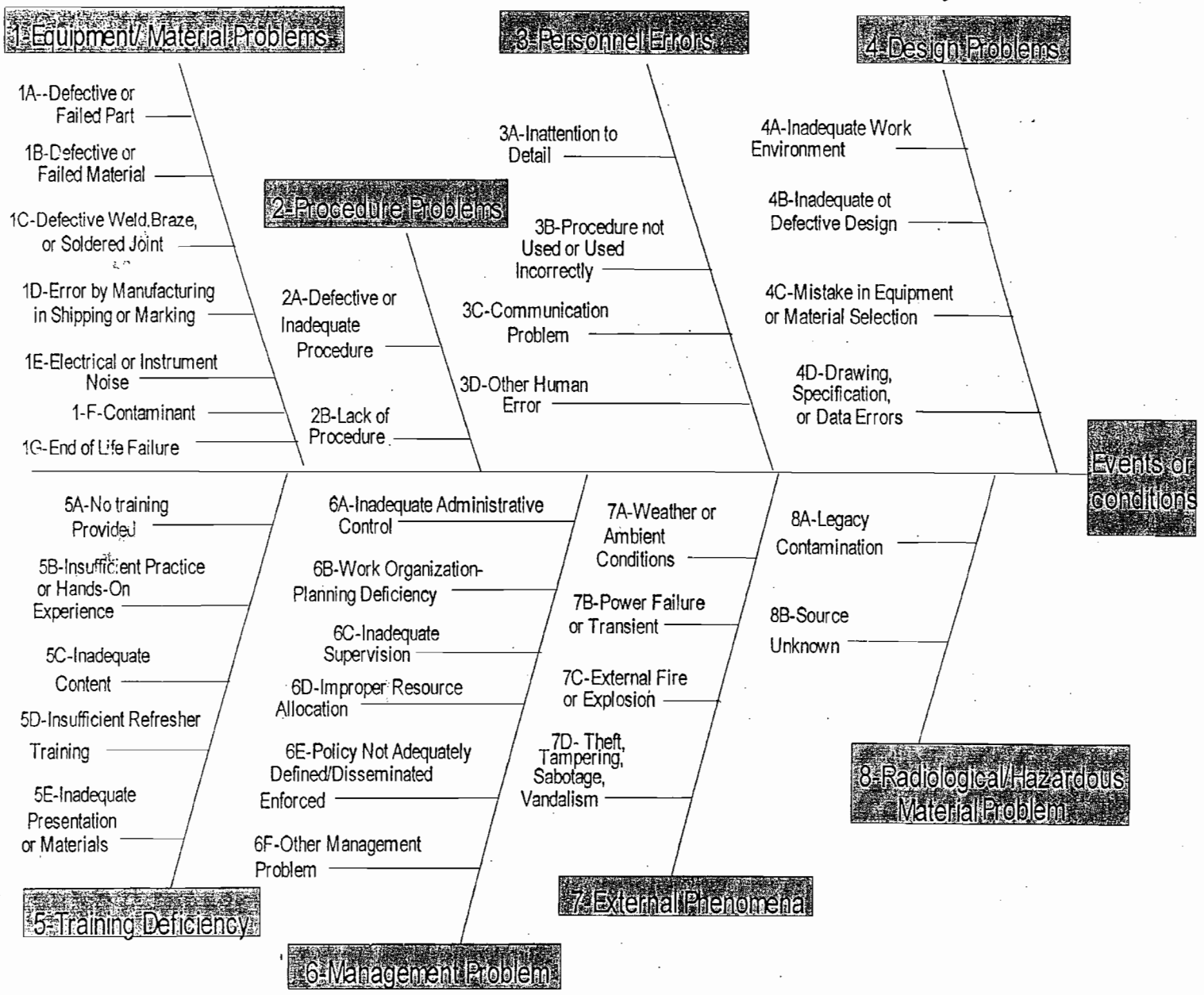


Activity ID	Activity Description	Early Start	Early Finish
1003073	16C-5. DOE staff participating-bioassay program	30NOV99	30NOV99
Area of Concern 16D			
1004069	16D-1. Verify Opportun for Improv performed	01AUG00	29SEP00
1004070	16D-2. Conduct add'l reviews-Phase II ISMS Impl	01AUG00	29SEP00
Issue 17			
Area of Concern 17A			
1001110	17A-1. Flow down requirements	17MAR00	30AUG00
1001280	17A-2. MOP sign ESH packages	01FEB00	31OCT00
1001290	17A-3. Procedure on S/C oversight issued	30MAR00	31JUL00
Area of Concern 17B			
1001130	17B-1. Review & revise PQ-A-1510	19APR00	30JUN00
Area of Concern 17C			
1001180	17C-1. Notify s/c of contractual deficiencies	01JUN00	31JUL00
1001190	17C-2. Implement S/C Oversight Plan	01JUN00	30OCT00
1001200	17C-3. S/C modify ES&H Plan re emerg response	01JUN00	31JUL00
1001201	17C-4. Review root cause analy - reported defici	01AUG00	30NOV00
1001202	17C-5. BJC I/CATS properly implemented	01AUG00	30NOV00
Area of Concern 17D			
1001220	17D-1. MA Sched - s/c training, annual	01JUN00	30OCT00
1001300	17D-2. Training Mgr annual report	01JUN00	30OCT00
Area of Concern 17E			
1001230	17E-1. Mgt attention on occurrence report	01FEB00	28JUL00

APPENDIX A SYSTEMATIC FACTORS FOR ROOT CAUSE ANALYSIS

Systemic Factors For Root Cause Analysis



APPENDIX B BJC PROCEDURE PQ-A-1230, *ROOT CAUSE ANALYSIS*

BECHTEL JACOBS
Bechtel Jacobs Company LLC

BJC-PQ-01 Performance Assurance Manual	PQ-A-1230	REV. NO. 0
TITLE: ROOT CAUSE ANALYSIS	EFFECTIVE DATE: 1/10/00	Page 1 of 7
	PREPARER/POC: C. M. Eubanks	
	APPROVED BY/DATE: Danny Whitaker-Sheppard 126/99 [Approval Signature On File]	

REVISION LOG		
Revision Number	Description of Changes	Pages Affected
0	Initial Release; Replaces QA-313, *Root Cause Analysis*	All

PURPOSE

This procedure defines the Bechtel Jacobs Company methods for performing root cause analysis.

SCOPE

This procedure applies to all Bechtel Jacobs Company operations and employees.

TRAINING

Persons participating in a Root Cause Analysis are required to read this procedure. Persons conducting/leading a Root Cause Analysis are required to read this procedure and complete additional training, as applicable, in the specific Root Cause Analysis methodology used.

OTHER DOCUMENTS NEEDED

- PQ-A-1210, *Issues Management Program*
- PQ-A-1220, *Occurrence Notification and Reporting*

WHAT TO DO

A. Preparing for a Root Cause Analysis

Note 1: "Issue Owner" refers to the individual assigned responsibility in PQ-A-1210, *Issues Management Program*, to analyze the issue.

Issue Owner

1. IF the assistance of a Subject Matter Expert, and/or a trained Root Cause Facilitator, and/or other individuals having skills, training, or experience related to the issue are needed, **THEN**
   assemble a Root Cause Analysis Team.

2. Ensure personnel leading or conducting the root cause analysis are trained in the methodology used, as applicable.

Issue Owner /Root Cause Analysis Team

Determine the methodology to be used for the root cause analysis (Attachment A) based on the significance or risk associated with the issue being analyzed.

B. Performing a Root Cause Analysis

Issue Owner /Root Cause Analysis Team

1. Assemble the following:

   a. Information related to the issue; chronology of events, personnel involved;
   b. Determination whether the issue is recurring;
   c. Identification of associated equipment, computer software;
   d. Recent program or equipment changes; and
   e. Recent program or equipment changes; and
   f. A description of the physical environment or circumstances.

Issue Owner /Root Cause Analysis Team

2. Identify and interview responsible personnel involved in the issue and other personnel (i.e., Project Managers, Subject Matter Experts), who have knowledge of the circumstances related to the issue.

3. Perform the root cause analysis and identify the root cause.

4. Select the Root Cause code that best corresponds to the identified root cause using Attachment B.

5. Determine the direct cause (the action or action sequence that caused the deviation from expected behavior or performance) and contributing causes, as appropriate, as the basis for developing the root cause.

6. Identify preventive actions, including interim actions, if needed, which will address the root cause, direct cause, and contributing cause(s) and prevent recurrence of the issue.

7. Develop a schedule for implementation of the preventive actions.

8. Compile evidence and other information used in the root cause analysis in the issue response evidence package.

9. Document the results of the causal analysis, the root cause code, and preventive actions on the Issue Response Report or Occurrence Report.

RECORDS

Records supporting the root cause analysis and the identification, validation, implementation, verification, and closure of preventive actions are maintained in issue evidence files in accordance with PQ-A-1210, *Issues Management Program.*

SOURCE DOCUMENTS

- DOE Manual M 232.1-1A, *Occurrence Reporting and Processing of Operations Information*
- DOE-NE-STD-1004-92, *Root Cause Analysis Guidance Document*

Attachment A
Summary of Root Cause Analysis Methods
Page 1 of 1

Method	When to Use	Advantages	Disadvantages
Fishbone Diagram	Use for simple issues where "Engineering Judgement" or "Operational Experience" may be primary decision factors.	Easy to use; ensures that all cause categories are evaluated for potential applicability to the issue.	Not normally appropriate for complex issues.
Change Analysis	Looks at a problem by analyzing the deviation between what was expected and what actually happened; especially useful in evaluating equipment failures; often leads to analysis in other areas.	Simple 6-step process easy to learn and apply.	Limited value because of danger of accepting wrong, "obvious" answer.
Question to the Void	Use for simple issues where causes are somewhat evident.	Easy to use.	Not normally appropriate for complex issues; requires tenacity, willingness to ask sensitive questions, and the ability to know when you have identified the systematic issue.
Events and Causal Factors (E&CF) Charting and Analysis (TapRoot)	Use for multi-faceted problems with long or complex causal factor chains; describes the time sequence of a series of tasks and/or actions and the surrounding conditions leading to an event; often used in conjunction with barrier and change analysis.	Systematic tool to aid in collecting, organizing, and depicting events and conditions surrounding the primary event; provides a visual display of analysis process; identifies probable contributors to the event or condition; ensures all cause categories are evaluated.	Time-consuming and requires familiarity with analysis process to be effective
Barrier Analysis	Use to assess why existing physical and administrative barriers failed, and to identify additional barriers that are needed to prevent recurrence;	Identifies safety system elements that failed; results can easily be presented graphically.	Requires familiarity with the analysis process to be effective; works well in conjunction with E&CF Analysis.
Fault Tree Analysis (Management Oversight and Risk Tree – MORT)	Use for complex issues where a systematic approach is necessary and documentation is required; provides a graphical representation of an event using a deductive approach (general to specific).	Ensures that all cause categories are evaluated; provides a visual display of analysis process;	May require significant training for proper use and interpretation, or use of a trained facilitator.
Walk-through Task Analysis	May be utilized to supplement other analysis methods; personnel who actually performed the task conduct a step-by-step reenactment of their actions for an observer.	Easy to use; often used in conjunction with change analysis.	Personnel involved may feel intimidated.
Kepner-Tregoe	Use for major concerns where all aspects need thorough analysis.	Highly structured process; recommended for management systems and programmatic issues.	Requires training or use of a trained facilitator; not specifically designed for event-initiated issues; may be more comprehensive than needed for some issues.

Attachment B
Cause Codes
Page 1 of 2

(Source DOE Manual M 232.1-1A, Occurrence Reporting and Processing of Operations Information)

1. **EQUIPMENT/MATERIAL PROBLEM.** An event or condition resulting from the failure, malfunction, or deterioration of equipment or parts, including instruments or material.
   1A. DEFECTIVE OR FAILED PART. A part/instrument that lacks something essential to perform its intended function.
   1B. DEFECTIVE OR FAILED MATERIAL. A material defect or failure.
   1C. DEFECTIVE WELD, BRAZE, OR SOLDERED JOINT. A specific weld/joint defect or failure.
   1D. ERROR BY MANUFACTURER IN SHIPPING OR MARKING. An error by the manufacturer or supplier in the shipping or marking of equipment.
   1E. ELECTRICAL OR INSTRUMENT NOISE. An unwanted signal or disturbance that interferes with the operation of equipment.
   1F. CONTAMINANT. Failure or degradation due to radiation damage or foreign material such as dirt, crud, or impurities.
   1G. END OF LIFE FAILURE. A failure where the equipment or material is run to failure and has reached its end of design life.

2. **PROCEDURE PROBLEM.** An event or condition that can be traced to the lack of a procedure, an error in a procedure, or a procedural deficiency or inadequacy.
   2A. DEFECTIVE OR INADEQUATE PROCEDURE. A procedure that either contains an error or lacks something essential to the successful performance of the activity.
   2B LACK OF PROCEDURE. No written procedure was in place to perform the activity.

3. **PERSONNEL ERROR.** An event or condition due to an error, mistake, or oversight.
   3A. INATTENTION TO DETAIL. Inadequate attention to the specific details of the task.
   3B. PROCEDURE NOT USED OR USED INCORRECTLY. The failure to use or the inappropriate use of written instructions, procedures, or other documentation.
   3C. COMMUNICATION PROBLEM. Inadequate presentation or exchange of information.
   3D. OTHER HUMAN ERROR. Human error other than those described above.

4. **DESIGN PROBLEM.** An event or condition that can be traced to a defect in design or other factors related to configuration, engineering, layout, tolerances, calculations, etc.
   4A INADEQUATE WORK ENVIRONMENT. Inadequate design of equipment used to communicate information from the facility to a person (e.g., displays, labels, etc.) as well as inadequate work environment, such as inadequate lighting, working space, or other human factor considerations.
   4B INADEQUATE OR DEFECTIVE DESIGN. A design in which something essential was lacking (defective) or when a detail was included but was not adequate for the requirement (inadequate
   4C ERROR IN EQUIPMENT OR MATERIAL SELECTION. A mistake in the equipment or material selection only, not to include a procurement error (see Personnel Error - (d) Other Human Error) or a specification error (see Design Problem - (d) Drawing, Specification, or Data Errors).
   4D DRAWING, SPECIFICATION, OR DATA ERRORS. An error in the calculation, information, or specification of a design.

Attachment B
Cause Codes
Page 2 of 2

5. **TRAINING DEFICIENCY.** An event or condition that can be traced to a lack of training or insufficient training to enable a person to perform a desired task adequately.
   - 5A NO TRAINING PROVIDED. A lack of appropriate training.
   - 5B INSUFFICIENT PRACTICE OR HANDS-ON EXPERIENCE. An inadequate amount of preparation before performing the activity.
   - 5C INADEQUATE CONTENT. The knowledge and skills required to perform the task or job were not identified.
   - 5D INSUFFICIENT REFRESHER TRAINING. The frequency of refresher training was not sufficient to maintain the required knowledge and skills.
   - 5E INADEQUATE PRESENTATION OR MATERIALS. The training presentation or materials were insufficient to provide adequate instruction.

6. **MANAGEMENT PROBLEM.** An event or condition that can be directly traced to managerial actions or methods.
   - 6A INADEQUATE ADMINISTRATIVE CONTROL. A deficiency in the controls in place to administer and direct activities.
   - 6BWORK ORGANIZATION/PLANNING DEFICIENCY. A deficiency in the planning, scoping, assignment, or scheduling of work.
   - 6C INADEQUATE SUPERVISION. Inadequate techniques used to direct workers in the accomplishment of tasks.
   - 6D IMPROPER RESOURCE ALLOCATION. Improper personnel or material allocation resulting in the inability to successfully perform assigned tasks.
   - 6E POLICY NOT ADEQUATELY DEFINED, DISSEMINATED, OR ENFORCED. Inadequate description, distribution, or enforcement of policies and expectations.
   - 6F OTHER MANAGEMENT PROBLEM. A management problem other than those defined above.

7. **EXTERNAL PHENOMENA.** An event or condition caused by factors that are not under the control of the reporting organization or the suppliers of the failed equipment or service.
   - 7A WEATHER OR AMBIENT CONDITION. Unusual weather or ambient conditions, including hurricanes, tornadoes, flooding, earthquake, and lightning.
   - 7B POWER FAILURE OR TRANSIENT. Special cases of power loss that are attributable to outside supplied power.
   - 7C EXTERNAL FIRE OR EXPLOSION. An external fire, explosion, or implosion.
   - 7D THEFT, TAMPERING, SABOTAGE, OR VANDALISM. Theft, tampering, sabotage, or vandalism that could not have been prevented by the reporting organization.

Attachment B
Cause Codes
Page 1 of 2

8. **RADIOLOGICAL/HAZARDOUS MATERIAL PROBLEM.** An event related to radiological or hazardous material contamination that cannot be attributed to any of the other causes.
   - 8A LEGACY CONTAMINATION. Radiological or hazardous material contamination attributed to past practices.
   - 8B SOURCE UNKNOWN. Radiological or hazardous material contamination where the source cannot be reasonably determined.

9X. **ROOT CAUSE ANALYSIS NOT REQUIRED PER PROCEDURE.** Codes used when an issue is not significant and a root cause analysis is not required.

APPENDIX C ISMS DESIGNATIONS FOR ROOT CAUSE ANALYSIS

The following ISMS designations were utilized during Root Cause Analysis to tie Area of Concerns back to ISM.

Principles	Functions
1. Line Management Responsibility for Safety 2. Clear Roles and Responsibilities 3. Competence Commensurate With Responsibility 4. Balanced Priorities 5. Identification of Safety Standards and Requirements 6. Hazard Control Tailored to Work Being Performed 7. Operations Authorization	1. Define the Scope of Work 2. Analyze the Hazards 3. Develop and Implement Hazard Controls 4. Perform Work Within Controls 5. Provide Feedback and Continuous Improvement